

FLIGHT

&
THE AIRCRAFT
ENGINEER.

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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With this issue of "FLIGHT" is included a 32-page two-colour Christmas Greeting, and the price is one shilling.

Owing to Christmas Day and Boxing Day falling on Wednesday and Thursday in Christmas week, it is necessary that all copy, Editorial and Advertisement, for the issue of December 26 should reach "FLIGHT" Offices not later than the morning of December 19.

EDITORIAL COMMENT.

IN a report issued to the public on Saturday of last week, and which we dealt with in detail in our issue of the 28th November last, the Civil Aerial Transport Committee deals at considerable length with the future of aerial legislation. It is laid down as the considered opinion of the Committee that "it is of vital importance that the British Empire should not be allowed to lag behind other nations in the movement." We can all accept the proposition without the slightest hesitation or qualification, but we are very greatly concerned to know what measures the Government of the day proposes to put into effect in order to ensure that we do not lose our place in the race for aerial supremacy, whether we regard this question of supremacy from the civil or the military point of view. The Report of the Committee is an admirably expressed document, full of excellent suggestions on a number of subjects, but what we want to know now is: When and how is it proposed to translate these ideas into action? At the present moment there is literally nothing doing in commercial aviation in this country. There are many schemes afoot, and

we believe that more than one company is quite ready to proceed to actual business as soon as the powers that be can be persuaded to give the necessary facilities and say under what conditions aerial services may be conducted. Now, in Germany, we are told, there are already running several mail and passenger-carrying services, and this in spite of the fact that Germany has emerged from the War a defeated power and is even now in the throes of a revolution which perilously approaches dissolution of the Empire. Who is running these services and whether they are State-owned or not does not appear at the moment, though we are told that a German Air Ministry has been formed, but the essential facts are that certain services actually came into being last Saturday. As to the prospects of an early beginning in this country, these can be judged by an interview, published in the *Daily Chronicle* of the 9th inst., with an "official of the Air Ministry." *Imprimis*, the interviewed official told his questioner that the Air Ministry had no desire to repress or restrict private enterprise, but that, in the opinion of the responsible officials, the air is not yet ready for commercial ventures on a big scale.

"When you sit down to think out a scheme for regulating and controlling air traffic," he said, "you begin to realise the enormous difficulties that call for solution. A large number of questions have to be met and answered. To begin with, there are no laws of the air at present, and to bring the air into the commercial sphere without laws would produce chaos. There would be immediate trouble with the Customs authorities of all nations. Adequate legislation would have to be framed to prevent contraband merchandise being carried through the air from here to the Continent, and *vice versa*. There would have to be a system of air-Customs, and that in itself presents many problems. For instance, unless a very careful check were devised, a pilot wishing to convey contraband could elude detection by coming down in an unauthorised spot on the plea of engine trouble or adverse weather conditions. Then again, the unauthorised carrying of letters would bring in the postal

authorities, who would want to know all about it. Who should carry the air mails would have to be decided. To police the air presents other difficulties. How are you going to do it? You can hardly imagine an offender scudding away from an air policeman whose machine may be the slower of the two, and hiding behind a cloud until everything was clear. It's a new world, and we've got to make proper arrangements for it. At present, navigation of aircraft of every description in the United Kingdom and the coasts and territorial waters adjoining, is prohibited by law, with the exception of naval and military machines or aeroplanes operating within three miles of a recognised aerodrome. That law is likely to stand for the present, but the Air Ministry is now engaged on a comprehensive scheme of air legislation which will attempt to solve the many problems of the new era. When that scheme has become law, and air routes and rules and general procedure have been definitely laid down, commercial flying is likely to receive the official sanction and encouragement it deserves."

As to the immediate establishment of international services, we admit there is considerable force in the arguments adduced. Unquestionably, it would be impossible to institute aerial services between one country and another without the necessary laws and regulations to govern such traffic as would immediately commence to flow back and forth. But we cannot see any reason why internal development should have to wait until an international code of aerial laws has been formulated and agreed upon by the nations concerned. It ought to be possible to allow the institution of internal services almost at once.

There is such a thing as the Aerial Navigation Act in existence, and it should surely be possible to carry on with that until revised legislation can be brought to bear on the subject. We agree all the difficulties, but we do think that what is possible in Germany ought to be possible here. As the interviewed official said, D.O.R.A. is not dead yet, and all civil flying is prohibited until the unlovely lady has been decently laid to rest. Surely, however, it is a comparatively simple matter to abolish the Order against civilian flying at more than three miles from a recognised aerodrome, or to so modify it as to give an opportunity for commercial enterprise to get started.

Indeed, so simple is it in reality that we are inclined to the opinion that it is not so much the inherent difficulties of passing from War to peace flying that stand in the way, as the state of uncertainty into which the sudden collapse of the War has plunged the people who are now confronted with the necessity of seeking other fields of work. We are fully aware that there is a number of these who are working as hard as they can to make commercial aviation a monopoly of the State, not so much because they are convinced that this would be the soundest thing to do as because it holds out the surest hope of keeping them in their jobs. We do not for a moment say that this is the case all round, or that they are likely to succeed in their efforts, but we are fully convinced that there are enough of them to count and to make the task more difficult than it would otherwise be.

Unfortunately, we have still another two months at least before Parliament can meet again and consider fresh aerial legislation, and in the meantime it looks very much as though we shall have to content ourselves with pious platitudes about its being essential that the British Empire shall not be allowed to lag behind other nations—what time the latter are getting busily to work and putting their own schemes of aerial navigation into practical effect.

This Year's R.A.F. Record

The surrender of the 1,700 German aeroplanes provided for under the terms of the Armistice is nearly completed. The taking over, examination and parking of this huge number of machines has necessarily taken time, as the German armies, in their retirement, have simply been leaving the machines behind in the evacuated hangars and aerodromes.

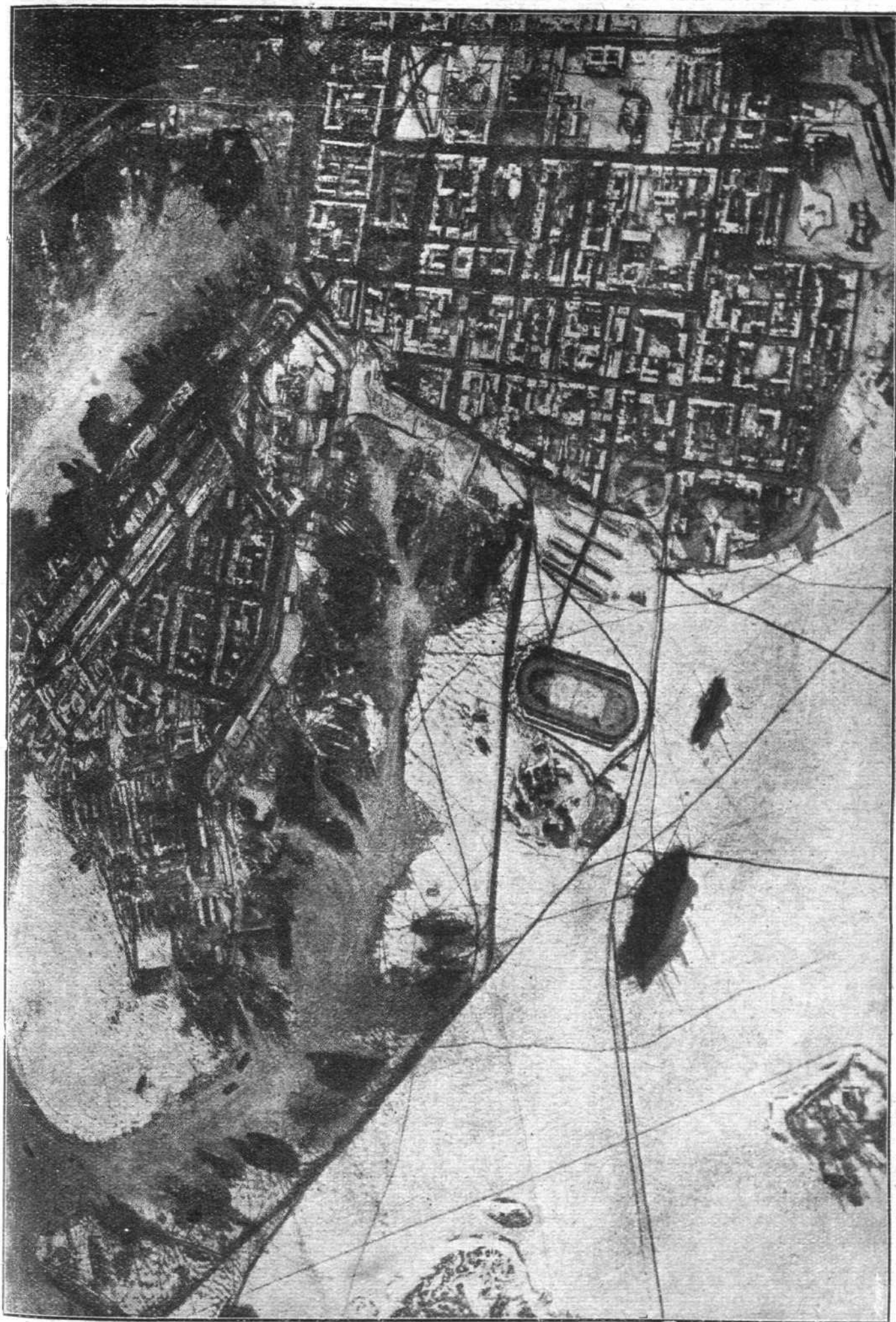
Moreover, true to his character, the Hun has tried all sorts of evasions and has placed all sorts of difficulties in the way. These, however, have been satisfactorily countered and are being adjusted in response to firm demands made by the Allies. The principal difficulties have been in connection with the precise proportion of types of aircraft to be surrendered and the air-worthiness of certain numbers of the machines allotted for surrender. It may be remarked in passing that the terms of surrender include the turning over of all the equipment of the bombing and reconnaissance machines, including bomb sights, aerial photographic apparatus, wireless gear and machine guns, so that if the Hun should be so ill-advised as to precipitate a resumption of hostilities—which is in the highest degree unlikely, however—these 1,700 machines will form an extremely useful complement to the existing aerial strength of the Allies.

Some idea of the terrible depletion which the German air service has suffered since the beginning of the year may be gathered from the fact that since the 1st of January last, on the Western Front alone the British R.A.F. has destroyed in aerial combat 3,060 German machines and driven down out of control 1,174.

Bearing in mind the conservative manner in which enemy losses have been assessed by our own command, we can safely assume that the actual figures are in reality substantially more than those allowed. This gives us a total of a minimum number of 4,234 enemy machines put out of action, at a cost to ourselves of 1,318 machines recorded as missing. Add to the enemy's losses the machines now in process of being handed over, and we get a grand total of 5,934 machines completely lost to the Germans, and that before we begin to take into account the losses suffered at the hands of the French and American air services. We do not know what the latter figures are, but it is very safe to say that since the 1st of January the enemy cannot have lost less, on the Western Front, than between 8,000 and 9,000 machines of all types, while there remain to be added to these his losses on the Italian front and in other more remote theatres of war.

Regarding the less spectacular, though equally valuable, work of the R.A.F. during the same period it is officially stated that 264,695 photographs were taken in the air over the German lines in the West. The total tonnage of bombs taken into the air by R.A.F. machines and dropped upon military objectives behind the German lines was 5,429, while the number of "spotting" flights and those made for the purpose of maintaining contact with our advancing troops is literally incalculable.

The figures given leave out of account entirely the work of the aeroplane and seaplane squadrons working with the Navy, as well as that of the airship branch of the R.A.F. which has been engaged during the period in convoy work and anti-submarine patrols.



The harbour of Helsingfors with Russian warships and merchant ships, photographed from a German aeroplane.

Germany Must Pay

By the time these lines appear in print we shall be in the midst of the General Election, at which the country is asked to give a mandate to the new Government for the conclusion of a satisfactory peace. Yet, at the moment of writing, we still have no definite assurance that Germany is to be made to pay the cost of the War, so far as it can be ascertained. The Prime Minister has sent to the Press a statement of his policy, which in most of its essentials is a good statement, but on the question of making Germany pay he is distinctly non-committal. He tells the country that: "All the European Allies have accepted the principle that the Central Powers must pay the cost of the war *up to the limit of their capacity*." That will not do at all, unless we are told at the same time how the "limit of capacity" is going to be arrived at and on what basis it is to be assessed. As a matter of fact, there is no limit to the capacity of the Central Powers to pay up to the full the costs of the War. It is self-evident that what they cannot pay in ten years they can pay in fifty, or a hundred or even two hundred years. We need waste no sympathy on the future generations of the Huns. We have authority for the dictum that the sins of the fathers shall be visited on the children, even to the third and fourth generation. Moreover, it amounts to this: that if the sins of the present generation of Huns are not visited on *their* children, they will have to be paid for by our own, and while we agree that the process of Nature which exacts retribution from generations unborn, is unjust it is nevertheless inevitable as the stars in their courses, and when it comes to the choice of visiting the consequences of the War on our own posterity or that of the Hun, we maintain that the choice can only fall one way. There is no room for forgiveness or magnanimity here. There is only one limit, and that is the amount the War has cost. We must keep right in front of us the fact that it was Germany who willed the War, and thus gambled with the fates—War was the last thing in the world that was desired by a single one of the Entente Powers. Now, apart from the colossal sums which the War has directly cost us, we have lost enormously in stoppage of trade. How much we do not know, and can never know. That is all wealth that is not recoverable by way of indemnity. Moreover, and this is an argument that we do not remember to have seen advanced before, as a direct consequence of the War the purchasing power of the pound sterling has fallen to something like eight shillings. This means that, in consequence if Germany's lust of world power, every single man, woman and child in the country is paying a War tax of twelve shillings in the pound before any question of direct taxation falls to be considered. Over and above that the standard rate of income-tax is six shillings in the pound, with the strong prospect that it will be increased in the very near future unless Germany is made to pay. And yet there are those who talk about letting Germany down lightly, and others who fear that if the indemnity is made too heavy we shall drive the Huns to desperation. For our own part, we have no patience with the former, and the arguments of the latter leave us cold. All we are concerned with is that Germany, like any other criminal, should be made to pay the penalty of her crimes and that the consequences of the latter should not fall upon the heads of those who were the innocent victims of her criminality.

Then, we are not at all comfortable about the matter of the punishment of the arch-criminals. The Prime Minister has assured us that a body of jurists has been consulted, and that these have unanimously come to the conclusion that the Kaiser and his accomplices in the making of this War *ought* to be tried by an international court. But where are the assurances that these men *will* be so tried and, if found guilty, *will* be adequately punished? Surely, it would have been just as easy to be definite as to be nebulous, especially as it is so abundantly clear that the country will be satisfied with nothing less than a full and impartial trial and as full and impartial punishment of the men—crowned heads or commoners—who brought the untold misery upon the world of the greatest as well as the most insensate war in all history. "FLIGHT" has no politics, but the interests of the Empire are as close to those who conduct it as to any, and, as we took occasion to say last week these are times in which no organ of wide circulation can sit silent and allow these great issues to go by default. We feel that we should be failing in our duty at this important period of our history did we not join our voice to those that are so justly and properly calling for the punishment of Germany herself and for that of the men who were at the head of her destinies during the fateful days of 1914.

Railways as Air Routes

In a letter to the *Daily Mail* Sir Charles Wakefield makes an excellently practical series of suggestions for utilising our great main railways as aerial routes. There is nothing new in the suggestion itself, inasmuch as main lines of railway are among the air pilot's best guides, but what Sir Charles does is to put forward a concrete scheme for rendering these lines permanently useful as such. Not the least merit of the idea is its simplicity. He suggests that, for example, the London and North-Western should be marked by a great white limestone square at intervals of one or two miles; the Great Northern might be distinguished by a circle; the Midland by a triangle; the Great Western by a cross, and so on. Important branch lines could be indicated by the primary sign of the main line to which they act as feeders, with the addition of a line, for example. Properly carried out, such a scheme would constitute a simple aerial guide for pilots, which could be learnt in an hour and used in conjunction with an ordinary railway map. As Sir Charles himself points out, the railways give us at once the direct route from one town to another, and there is sufficient ground everywhere along these lines on which to place the signs at intervals. The cost of maintenance would be very small, while that of their installation would by no means be great.

The idea is so excellent that there is really nothing to be said about it. Its merits are so self-evident as to require no elaboration, and it seems to us that the only question that can possibly arise is that of exactly who is to find the money for installing such distinguishing marks. To our way of thinking, it is the affair of the Air Ministry, and the latter should undertake it at the public charge. We shall have to maintain a large Air Force after peace, and service machines will require these signs as much as any, but even apart from that it seems to us that aerial routes are as much the concern of the State as roads and ocean highways.

HONOURS

It was announced in a supplement to the *London Gazette* on December 3rd that the King has been pleased to confer the following rewards on officers and other ranks of the Royal Air Force in recognition of gallantry in flying operations against the enemy:—

Distinguished Service Order

Capt. E. J. McClaughry, D.F.C. (Australian F.C.) (France).—A bold and fearless officer, who has performed many gallant deeds of daring, notably on September 24th, when attacking a train at 250 ft. altitude, he obtained a direct hit, cutting it in two, the rear portion being derailed. He then fired a number of rounds at the fore portion, which pulled up. Sighting a hostile two-seater he engaged it and drove it down. Proceeding home, he observed seven Fokker biplanes; although he had expended the greater part of his ammunition, Capt. McClaughry never hesitated, but engaged the leader. During the combat that ensued he was severely wounded by fire from a scout that attacked him from behind; turning, he drove this machine off badly damaged. His ammunition being now expended he endeavoured to drive off two hostile scouts by firing Very lights at them. Exhausted by his exertions, he temporarily lost consciousness, but recovered sufficiently to land his machine safely. This officer has destroyed 14 machines and four balloons, and has repeatedly displayed an utter disregard for danger in attacking ground targets. (D.F.C. gazetted September 21st, 1918; Bar to D.F.C. same date.)

Bar to the D.F.C.

Lieut. (A. Capt.) O. M. Baldwin, D.F.C. (France).—A gallant and determined officer, conspicuous for his skill and daring in attack. Since he was awarded the Distinguished Flying Cross he has destroyed six enemy aircraft and driven down two out of control, accounting for four in one day. In all he has to his credit 13 machines destroyed and three driven down out of control. (D.F.C. gazetted September 21st, 1918.)

Lieut. (A. Capt.) R. B. Bannerman, D.F.C. (France).—A bold and resolute leader, whose ability inspires confidence in those who serve with him. During the operations in September he accounted for six enemy machines, displaying marked courage and judgment. (D.F.C. gazetted November 2nd, 1918.)

Lieut. (A. Capt.) H. D. Barton, D.F.C. (France).—An excellent patrol leader, combining in a marked degree coolness and courage. Since July 30th he has destroyed three enemy machines and driven down three out of control. He has also rendered most valuable service in attacking enemy troops on the ground, silencing, on August 30th, a hostile battery and causing the horses to stampede. (D.F.C. gazetted November 2nd, 1918.)

Lieut. (A. Capt.) R. C. B. Brading, D.F.C. (France).—An exceptionally keen and daring patrol leader who has accounted for five enemy machines during the last month. On September 2nd, while leading his flight, he observed 12 Fokker biplanes, which he at once engaged, driving one down out of control. Later, on the same day, he engaged a formation of Fokkers that were harassing our corps machines, causing one to crash. This officer's skill and bravery have proved a great incentive to the other pilots of his squadron. (D.F.C. gazetted November 2nd, 1918.)

Lieut. (A. Capt.) C. P. Brown, D.F.C. (Sea Patrol, Flanders).—A fine fighting pilot and brilliant leader who has destroyed 13 enemy aircraft. On October 4th he led his formation of 15 scouts to attack a superior number of the enemy. Nine of the latter were destroyed. Capt. Brown, single-handed, accounting for three. (D.F.C. gazetted September 21st, 1918.)

Lieut. (A. Capt.) C. F. Falkenberg, D.F.C. (Quebec R.) (France).—A gallant and skilful fighter who, since he was awarded the Distinguished Flying Cross, has destroyed four enemy machines and one balloon, and has also driven down two more machines out of control, making in all 14 enemy aircraft and one balloon to his credit. He has further rendered gallant service in attacking ground targets and reconnoitring enemy lines. (D.F.C. gazetted November 2nd, 1918.)

Lieut. (A. Capt.) G. B. Gates, D.F.C. (France).—This officer sets a fine example to the other pilots of his squadron, being conspicuous for his cool courage and brilliant leadership. During the past month he has accounted for six enemy two-seaters, five being driven down in flames and one crashed. (D.F.C. gazetted November 2nd, 1918.)

Lieut. T. S. Harrison, D.F.C. (France).—Bold in attack, skilful in manoeuvre, this officer never hesitates to engage the enemy, however superior in number. On October 2nd he, with three other machines, took part in an engagement with eight Fokkers; four of these were destroyed, Lieut. Harrison accounting for one. On another occasion he, in company with four others, engaged a large formation of Fokkers; three of these were destroyed, one by this officer. In all he has destroyed 20 enemy machines. (D.F.C. gazetted September 21st, 1918.)

Lieut. (A. Capt.) W. F. J. Harvey, D.F.C. (France).—A brilliant fighting pilot, who has proved himself a capable leader in many offensive patrols. During the August operations he personally accounted for seven enemy machines, and, in company with another pilot, destroyed an eighth, displaying courage and tenacity of high order. (D.F.C. gazetted July 2nd, 1918.)

Capt. W. H. Hubbard, D.F.C. (France).—This officer has shown great bravery and devotion to duty both in destroying enemy aircraft—10 of which he has accounted for—and in silencing anti-tank guns. On September 27th, he was flying at altitudes between 200 and 1,500 ft., he engaged and silenced many anti-tank guns, thereby rendering valuable service. He at the same time completed a detailed and accurate reconnaissance of the area, locating the position of our troops. (D.F.C. gazetted August 3rd, 1918.)

Lieut. (A. Capt.) W. R. Irwin, D.F.C. (France).—This officer is an exceptionally skilful pilot leader, combining fine fighting qualities with sound, clear judgment. On August 12th he led his patrol to attack a large formation of Fokker biplanes; he himself accounted for two of them. On a later date, attacking a formation of Fokker biplanes, he again destroyed two, the patrol accounting for two others. (D.F.C. gazetted November 2nd, 1918.)

Lieut. C. McEwen, M.C., D.F.C. (15th Res. Bn., Can. Inf.) (Italy).—A brilliant and courageous pilot, who has personally destroyed 20 enemy machines. Exhibiting entire disregard of personal danger, he never hesitates to engage the enemy, however superior in numbers, and never fails to inflict serious casualties. His fine fighting spirit and skilful leadership inspired all who serve with him. (M.C. gazetted September 10, 1918; D.F.C. gazetted July 2nd, 1918.)

Sec. Lieut. (A. Capt.) H. D. McLaren, D.F.C. (Sea Patrol, Flanders).—A very gallant officer and an exceptionally good fight commander. He has taken part in 65 raids, rendering on all occasions valuable service, notably on September 28th, when, in our advance, he carried out four raids on enemy railway junctions. During one of these he encountered a large formation of enemy aeroplanes, which he engaged, shooting down two. In the combat his observer was wounded in both legs. (D.F.C. gazetted November 2nd, 1918.)

Lieut. (A. Capt.) R. L. Manuel, D.F.C. (Australian F.C.) (France).—On many occasions this officer has led his patrol with exceptional ability and courage, notably on September 16th, when, with a patrol of 11 machines, he engaged 15 hostile aircraft. By skilful manoeuvre he completely defeated the enemy in a combat that only lasted 20 minutes, at the expiration of which period only four hostile machines remained in the air, and these retired. Six

of the enemy machines were seen to fall in a manner that would justify the supposition that they would crash. (D.F.C. gazetted July 2nd, 1918.)

Lieut. A. E. Reed, D.F.C. (France).—A bold and skilful scout pilot of undaunted courage who has destroyed 11 enemy aircraft. On August 31st he, single-handed, attacked five Fokkers, shooting one down. And this is only one instance of several where he has successfully engaged the enemy in superior numbers. (D.F.C. gazetted November 2nd, 1918.)

Lieut. (A. Capt.) C. G. Ross, D.F.C. (France).—A fine fighting pilot and leader, who has destroyed 12 enemy machines. On October 2nd he, with three other machines, attacked eight Fokker biplanes; in the engagement that followed four of these were destroyed, Capt. Ross accounting for one. (D.F.C. gazetted November 2nd, 1918.)

Lieut. (A. Capt.) W. E. Station, M.C., D.F.C. (France).—This officer has already been awarded the Military Cross and the Distinguished Flying Cross for conspicuous gallantry and devotion to duty. Since his last award he has destroyed five enemy machines and driven down one out of control. His example of courage and resource is a fine incentive to the other pilots of his squadron. (M.C. gazetted June 22nd, 1918; D.F.C. gazetted September 21st, 1918.)

Lieut. (A. Capt.) E. Swale, D.F.C. (Sea Patrol, Flanders).—A gallant and determined officer. On October 1st Capt. Swale led his patrol to attack 11 Fokker biplanes; in the engagement that ensued he drove down the leader, which crashed and caused a second machine to fall out of control. In addition to the foregoing, this officer has destroyed nine hostile 'planes and driven down five out of control. (D.F.C. gazetted November 2nd, 1918.)

Lieut. (A. Capt.) A. J. B. Tonks, D.F.C. (Sea Patrol, Flanders).—Since September 28th this officer has led 11 low bombing raids, displaying conspicuous courage and skill, and inflicting serious damage on enemy from low altitudes. During bombing raids Capt. Tonks has destroyed two enemy machines, proving himself a bold and daring fighter. (D.F.C. gazetted November 2nd, 1918.)

Lieut. (A. Capt.) F. R. Walker, D.F.C. (Midd'x R.) (France).—This officer displays conspicuous skill and resolute determination in carrying out low reconnaissance and contact patrols, often under very adverse weather conditions and in face of heavy machine gun and rifle fire, notably on September 30th, when he penetrated four times to about 5,000 yards behind the enemy lines in order to locate certain troops with whom all touch had been lost. He obtained the necessary information and carried out an exhaustive and most valuable reconnaissance of the area. On his return his machine was found to be riddled with bullets. (D.F.C. gazetted November 2nd, 1918.)

Lieut. C. B. Pithey, D.F.C. (France).—Sec. Lieut. (A. Lieut.) H. Rhodes, D.F.C. (York R.) (France).—Lieut. Pithey and his observer, Lieut. Rhodes, have crashed five enemy aeroplanes and driven down five out of control; in addition they have shot down two balloons in flames, displaying conspicuous courage and skill on all occasions. On September — they attacked an enemy two-seater on contact patrol; this machine at first retired east but returned, accompanied by six scouts, to the attack; after a short engagement they were driven off, and Lieut. Pithey, although his machine was badly shot about, continued his patrol and brought back a most valuable and accurate report. (Both D.F.C.'s gazetted August 3rd, 1918.)

Distinguished Flying Cross

Lieut. (A. Capt.) E. J. Addis (Sea Patrol, North Sea).—A bold and determined officer who during the last 10 months has displayed conspicuous zeal in tracking and engaging hostile submarines, carrying out this service frequently in most adverse weather conditions. He sets a fine example to others in his flight.

Lieut. C. E. H. Allen (France).—This officer has carried out many long-distance photographic flights and reconnaissances. In these operations he has invariably shown marked determination, and has proved himself a gallant and skilful fighter. On August 8th he undertook a photographic reconnaissance which was urgently required; several previous attempts had been made to carry it out without success owing to adverse weather conditions. Lieut. Allen, flying through clouds and handicapped by a high wind, successfully reached the objective and completed the reconnaissance. His return journey was an especially noteworthy flight, owing to the great banks of clouds, in one of which he spun from 18,000 ft. to 4,000 ft.

Lieut. E. O. Amm (France).—A gallant and dashing airman who has destroyed four enemy machines and a balloon. On September 17th, in company with six other machines, this officer took part in an engagement with 17 hostile aircraft; eight of these were destroyed, Lieut. Amm accounting for one.

Lieut. (A. Capt.) D. V. Armstrong (France).—A brilliant pilot of exceptional skill. His success in night operations has been phenomenal; and the services he renders in training other pilots is of the greatest value, personally supervising their flying and demonstrating the only successful method of attack by night. On the night of September 10th-11th, learning that an enemy aeroplane was over our front, he volunteered to go up. The weather conditions were such as to render flying almost impossible, the wind blowing about 50 miles an hour, accompanied by driving rainstorms; despite this, Capt. Armstrong remained on patrol for over an hour, his machine at times being practically out of control. The foregoing is only one of many instances of this officer's skill and resolution in night operations.

Lieut. (A. Capt.) J. Austin-Sparks (France).—An officer distinguished for gallantry and fine leadership. On September 29th Capt. Austin-Sparks rendered exceptionally fine service. Detailed to carry out an important reconnaissance, he succeeded in reaching his objective and obtaining the necessary information. The opposition he had to encounter was exceptionally heavy, and concentrated; his machine was badly damaged, and his observer's gun, with its mounting, was carried away by shell fire. Eventually, both he and his observer were wounded, Capt. Austin-Sparks being rendered temporarily unconscious, and unable to control his aeroplane. He, however, recovered sufficiently to land his machine safely with the aid of his observer.

Sec. Lieut. T. H. Barkell (Australian F.C.) (France).—Although this officer only joined his squadron some two months ago, his outstanding ability soon qualified him for the leadership of a patrol; and he has already acted as leader in 23 offensive flights. His conduct of these patrols, and the results he has achieved, testify to his exceptional enterprise, and fully justifies his early appointment to the responsible position of leader.

Lieut. B. E. Barnum (Sea Patrol, Flanders).—In the absence of his flight commander, Lieut. Barnum has since September 28th acted as leader in 11 successful low bombing raids. In these he has shown marked courage and devotion to duty, descending at times to 50 ft. altitude. In addition, this officer has destroyed four enemy machines.

Lieut. (A. Capt.) A. Beck (France).—A bold and skilful leader, who has himself shot down four enemy aeroplanes. His personal courage and able leadership have had a marked influence in maintaining the efficiency of the squadron.

Lieut. (A. Capt.) F. Belway (France).—A very gallant officer who is always ready to volunteer for any dangerous duty. During recent operations he has repeatedly brought back most valuable information regarding the develop-

ment of the situation, flying at very low altitudes and being subjected to heavy hostile fire. On August 25th, during a patrol, he observed an enemy two-seater calling for flares; attacking this machine, he drove it off; the enemy infantry having lit their flares, Lieut. Belway, descending to a very low altitude in face of heavy machine-gun fire, was able to obtain most accurate information as to the location of the enemy line.

Sec. Lieut. H. F. BIRCHAL (R.E.) (France).—During the recent operations this officer has rendered exceptional service. Sparing no effort to press his balloon forward, he was twice compelled to parachute. On August 27th his balloon was hit by shell fire; nose-diving from about 600 ft. he, with great presence of mind, tried to save his balloon by ripping. Although half-stunned by the fall he at once reascended in a fresh balloon. A fine example of determination and devotion to duty.

Lieut. (A. Capt.) H. A. R. BIZIOL (France).—A most successful leader of marked gallantry. During recent operations he has destroyed four enemy aeroplanes and driven down one out of control; two of these he accounted for in one engagement on September 15th with a number of Fokker biplanes. In addition he has driven down a hostile balloon.

Lieut. G. G. L. BLAKE, D.C.M. (France).—Throughout the recent operations this officer has rendered most valuable service in face of heavy hostile fire and attacks by enemy aeroplanes, compelling him on three occasions to parachute. He has completed 470 hours in the air, displaying gallantry and initiative of a high order. (D.C.M. gazetted June 18th, 1917.)

Capt. (A. Maj.) C. J. Q. BRAND, D.S.O., M.C. (France).—On the night of September 15th-16th this officer attacked an enemy aeroplane at 8,000 ft. In the combat that ensued his tracers burst the sump of one of the aeroplane's engines and the oil from it covered his machine in a black spray. Almost blinded by this he still continued the engagement, and eventually drove the enemy machine down to 200 ft., when, owing to intense hostile machine-gun fire from the ground, he was compelled to break off the combat. There is every reason to believe that this machine crashed. The foregoing is only one of many gallant deeds performed by this officer, who by his indomitable spirit and example has raised the efficiency of his squadron to a very high level. (D.S.O. gazetted May 31st, 1918; M.C. gazetted April 26th, 1917.)

Lieut. F. C. G. BROOME (France).—A bold and skilful officer who has displayed conspicuous courage and judgment in many engagements with hostile machines, notably on the night of September 15th-16th, when he observed a giant bombing machine held by searchlights and engaged by our anti-aircraft guns. His signals to the guns were not observed, and the fire continued, shells bursting all round the enemy machine; disregarding this he, with conspicuous gallantry, closed to 100 yards and drove the machine down in flames.

Lieut. A. BUCHANAN, 210 Sqdn. (Sea Patrol, Flanders).—On September 29th this officer displayed great gallantry. In an engagement with 15 Fokker biplanes, owing to engine trouble he was compelled to remain under his flight; he nevertheless accounted for two enemy machines, attacking one under its tail, causing it to crash, and driving another down out of control. In addition to the foregoing this officer has destroyed three machines and driven down two out of control.

Capt. (A. Maj.) K. L. CALDWELL, M.C. (France).—A fine fighting airman of courage and determination. On September 4th, when on offensive patrol, he, in company with another machine, attacked four Fokker biplanes; one of these was driven down by this officer. He has accounted for five enemy machines. (M.C. gazetted September 17th, 1917.)

Capt. D. H. M. CARBERRY, M.C. (R.F.A.) (France).—During recent operations this officer has displayed remarkable courage and skill in attacking hostile batteries, troops, &c., rendering valuable service in silencing the former and causing heavy casualties to the latter. In the air he is a bold and intrepid fighter. On August 30th he and his observer, attacked by seven Fokker biplanes, drove them off, shooting down one out of control. (M.C. gazetted March 26th, 1917.)

Lieut. (A. Capt.) W. M. CARLAW (France).—A bold and skilful fighter who has accounted for five enemy machines—two in one engagement, which occurred on July 31st.

Sec. Lieut. (A. Lieut.) R. F. CASEY (R. Innis. Fus.) (Independent Force, France).—On September 25th the machine in which this officer was an observer on a long-distance bombing raid was attacked by a number of enemy aeroplanes. In the engagement Lieut. Casey, having shot down two enemy scouts, was wounded in the thigh; he, however, continued the action until he fainted. At this time four enemy machines were firing at close range. The pilot roused Lieut. Casey, who, with fine determination, brought his gun into action and shot down two of the attacking aeroplanes out of control; the remaining two then broke off the engagement. Exhausted by the effort, Lieut. Casey again fainted, and was landed in a French aerodrome. A very fine example of skill, courage, and devotion to duty on the part of Lieut. Casey.

Lieut. O. C. CASSELS (France).—On August 21st this officer carried out a most successful artillery patrol lasting 3½ hours. He observed 13 active hostile batteries, three of which were silenced. As an artillery pilot his work has been quite exceptional, and while engaged on this service he never hesitates to engage enemy aeroplanes as opportunity occurs.

Maj. H. V. C. DE CRESPIGNY, M.C. (Suff. R.) (France).—A brilliant and gallant officer who displays high initiative in night flying, in which service his example has been invaluable to those under his command. On the night of September 23rd-24th Maj. Champion de Crespigny carried out a long-distance bombing raid. Flying a machine unsuitable for night duty, and in face of adverse weather conditions, he reached, and successfully bombed, his objective. A fine performance, calling for cool courage and determination. (M.C. gazetted May 16th, 1916.)

Sec. Lieut. E. J. CLARK (France).—A gallant and skilful officer who has rendered valuable service on night-bombing and reconnaissance duty. On the night of August 21st-22nd when reconnoitring a road at a low altitude, he bombed, with great success, 14 motor transports. On a second flight during the same night he bombed enemy horse transport, destroying eight transport wagons and their teams. Later on, with his last bomb, he obtained a direct hit on two motor lorries.

Sec. Lieut. (Hon. Lieut.) J. B. V. CLEMENTS (R.F.A.) (France).—An officer who, during recent operations, has rendered valuable and gallant service on various duties. He has attacked numerous parties of enemy infantry and hostile batteries, silencing the latter and causing heavy casualties to enemy personnel. On one occasion he volunteered to carry out a photographic reconnaissance that was urgently required. Despite extremely adverse weather conditions he succeeded in taking the photographs required, displaying marked skill and resolute determination.

Lieut. H. J. COCKMAN (Independent Force, France).—On September 25th, when on a long-distance bombing raid, this officer performed very gallant service. Heavily attacked on the return journey, he was severely wounded, his left arm being shattered and his right leg hit. Owing to his wounds and loss of blood he was unable to control his machine, but by instructing his observer he was able to keep his formation until he crossed the lines. Owing to his condition he had the greatest difficulty in landing, and it was only due to his determined courage that he succeeded in doing so.

Lieut. (A. Capt.) E. S. COLER (France).—Bold in attack and skilful in manoeuvre, this officer never hesitates to engage the enemy regardless of disparity in numbers. On August 13th, when on escort duty, he dived on a formation of 20 enemy aeroplanes. In the engagement that ensued he himself destroyed three and his observer two—making a total of five machines

destroyed in the fight; a fine performance, reflecting great credit on the officers concerned.

Sec. Lieut. (A. Lieut.) H. A. COYSE (R.G.A.) (France).—A capable and gallant observer who has done consistent good work on contact and counter-attack patrols. His success in locating and engaging anti-aircraft guns has materially assisted his pilot in obtaining accurate information as to the locality of our troops.

Lieut. (A. Capt.) J. A. CRAIG (France).—On August 24th this officer performed gallant service on a special reconnaissance. Having located our line and the enemy positions, despite very heavy hostile fire and under adverse weather conditions, he proceeded over the enemy lines at a very low altitude to try and find some of our troops that were believed to be cut off. His machine being hit in many places, he returned, made his report, and proceeded again on a further contact patrol.

Lieut. (A. Capt.) A. R. CROSS (France).—During recent operations this officer has carried out many successful reconnaissances at low altitudes, bringing back valuable and reliable information. On four successive days in August he carried out contact patrols; on each occasion, with fine disregard for personal danger, he deliberately drew hostile fire in order to locate with certainty the position of the enemy.

Lieut. (A. Capt.) F. W. DEANE (R. Ir. Rif.), Air Raid Service.—An exceptionally able officer, who has taken part in numerous hostile air raids by day and night. On the night of May 19th-20th, when at 16,000 ft. altitude, his machine took fire; with rare presence of mind and cool courage Capt. Deane brought it down in safety, thereby saving the life of his observer.

Capt. R. A. DELHAYE (France).—A most efficient fighting leader to whose example the high standard of efficiency attained by his squadron is largely due. He has led numerous offensive patrols, accounting personally for eight enemy machines. On all occasions he has shown high courage, ability, and fine leadership.

Lieut. D. F. DIMSEY (Australian F.C.) (France).—This officer has displayed conspicuous bravery in carrying out contact patrols, notably on September 10th, when in face of intense anti-aircraft and machine gun fire he flew over the line at a height of 800 ft., accurately pin-pointing the line until his observer was killed. He then returned to his aerodrome and rendered a valuable report of the situation.

Sec. Lieut. W. F. DOLLERY (R.G.A.) (France).—Throughout the recent operations this officer has set a magnificent example of fearlessness and devotion to duty. On September 29th, when observing from a balloon, he was forced by an enemy attack to parachute, but, although he had already been up for five hours, Sec. Lieut. Dollery, with most praiseworthy keenness, immediately reascended and continued to observe until weather conditions made it necessary to haul down the balloon.

Lieut. G. M. DUNCAN (France).—A courageous fighter and skilful leader who has accounted for seven enemy aeroplanes. On September 5th, when on escort duty, he attacked a formation of five Fokker biplanes; one of these he engaged at close range and it was seen to break up in the air; he then drove down a second out of control.

Lieut. W. S. EASTAUGH (France).—During recent operations this officer advanced his balloon over very difficult country, keeping up with the artillery and transmitting much valued information. His balloons were frequently burnt by hostile fire, and on September 1st the balloon, hit by shell fire, dived about 1,000 ft.; Lieut. Eastaugh, though subjected to heavy hostile fire, endeavoured to save the wreckage, setting a fine example of devotion to duty.

Sec. Lieut. H. EDWARDS (France).—When on offensive patrol, during September 16th, this officer with nine other machines, engaged 12 enemy scouts. In the combat that ensued he destroyed one, his pilot accounting for a second, and they took part in destroying a third. In all Sec. Lieut. Edwards has accounted for nine enemy machines, setting an excellent example of gallantry worthy of high praise.

Lieut. C. N. ELLEN (Sea Patrol, Mediterranean).—A keen and exceptionally able observer who for over a year has performed most valuable service in photographic flights at low altitudes and at times under very difficult conditions.

Lieut. H. R. W. ELLISON (Sea Patrol, Flanders).—During recent operations this officer has rendered conspicuous service as a pilot of heavy bombers. He has taken part in 35 successful raids, displaying at all times marked courage and perseverance, no matter how adverse the weather conditions.

Lieut. (A. Capt.) D. L. EVANS, M.C. (S. Wales Bord.) (France).—A brilliant fighting pilot, who has carried out numerous offensive and low-bombing patrols with marked success. He has accounted for six enemy aeroplanes, and in these combats in the air he is conspicuous for dash, determination, and courage. (M.C. gazetted December, 1916.)

Lieut. A. J. O. FARINA (Sea Patrol, Irish Sea).—During the last four months this officer has carried out 350 hours' sea patrols. He has rendered valuable service in locating hostile submarines, displaying remarkable keenness of observation and devotion to duty.

Lieut. H. A. E. GARD (France).—On September 8th this officer was on observation duty from a balloon; the wind increased to such strength that the cable snapped and the balloon was carried towards the enemy lines. Seeing that it could not be landed in our lines, he collected all maps and threw them overboard, and ordered the other observer to descend; he then collected the instruments, &c., and made a parachute descent, landing near our outpost lines. In acting thus Lieut. GARD displayed most praiseworthy coolness and devotion to duty, as he fully realised that by remaining in the basket to collect the instruments he was in great danger of being carried over the enemy lines.

Lieut. (A. Capt.) G. E. GIBBONS, M.C. (France).—On August 4th, when leading a patrol, his formation was attacked by 20 enemy aeroplanes. Seeing one of our Bristol fighters, in difficulties with its propeller, being attacked by one of the enemy machines, he dived and drove it down to crash; when climbing back to join his formation his observer shot down another enemy machine. In addition to the foregoing, Capt. Gibbons has destroyed four enemy aeroplanes and driven down three out of control. The gallantry in action he invariably displays sets an inspiring example to those with whom he serves. (M.C. gazetted September 16th, 1918.)

Capt. (A. Maj.) E. J. L. W. GILCHRIST, M.C. (9th Lancers) (France).—A fine leader, keen and courageous, who has inculcated a high standard of devotion to duty in his squadron. On August 1st, leading his squadron on a bombing raid over an enemy aerodrome, he descended as low as 10 ft. from the ground, causing much damage to sheds and machines with his bombs and machine-gun fire. During the operation his machine was heavily shot about by hostile fire. (M.C. gazetted October 20th, 1916.)

Capt. A. W. F. GLENNY, M.C. (A.S.C.) (France).—This officer has rendered valuable and gallant service on many occasions when on photographic and other reconnaissances. On May 16th, when directing fire on a hostile battery, he was attacked by 12 hostile scouts; his observer's gun jammed, and he was driven down to 2,000 ft., but, handling his machine with great skill, he avoided serious damage; after the scouts had been driven off he returned and carried on the shoot with successful results. In this flight, which lasted four hours, he succeeded in taking 15 photographs over corps' counter-battery area. (M.C. gazetted September 17th, 1917; Bar to M.C., July 26th, 1918.)

Lieut. (A. Capt.) C. B. GLYNN (L'pool. R.) (France).—This officer has shown remarkable skill and bravery in aerial combats, never hesitating to

attack, without regard to disparity of numbers. He has accounted for four machines—two in one flight.

Sec. Lieut. (A. Capt.) H. K. GOODE (Italy).—A brilliant fighting pilot who sets a fine example of courage and determination to the officers of his squadron. He has destroyed six enemy aeroplanes and two kite balloons.

Lieut. (A. Capt.) W. B. GREEN (France).—A bold and very gallant officer who has destroyed two enemy aeroplanes and driven down five out of control. He has also shown a fine offensive spirit in engaging ground targets during the recent battles, using his machine-guns with great effect.

Lieut. (A. Capt.) W. E. GREEN (France).—A skilful, courageous pilot and a brilliant leader, conspicuous for his sound judgment. No difficulties daunt him, and he has never failed to carry out any task that he may have been set. He sets a splendid example to the whole squadron.

Lieut. G. A. GRIFFIN (R. Dub. Fus.) (France).—An officer of high courage and initiative who has carried out a number of contact patrols at low altitudes and in face of heavy hostile fire, obtaining most satisfactory reports. While on one contact patrol on August 21st he saw a number of the enemy retreating into a town; descending to a low altitude under heavy machine-gun fire he followed them up, inflicting a number of casualties.

Capt. A. C. H. GROOM (Independent Force, France).—This officer led a formation in a successful long-distance bombing raid against an enemy town on September 25th. During the operations the leader of another formation was shot down, and this formation was broken up. Capt. Groom rallied these machines and kept them together, displaying marked initiative and daring, for, both on the outward and return journey, he was subjected to incessant attacks by enemy formations. The skill and determination shown by this officer on this occasion calls for the highest praise, for it was largely due to his efforts that the objective was successfully bombed and that his formation and the remaining machines of the other returned safely in face of the hostile attacks.

Sec. Lieut. C. G. HAIGH (France).—This officer has been conspicuous for his determination and devotion to duty while carrying out contact patrols, notably on September 12th, when, in spite of low clouds and driving rain, he successfully located a number of our posts. To obtain this information he was compelled to descend to 200 ft., as no flares were lit.

Lieut. M. O. HASKELL (R.F.A.) (France).—During recent operations this officer has rendered most valuable service in bringing back accurate information as to the position of our lines. In this service he has displayed great keenness and disregard of danger, persevering in face of hostile attacks in the air and heavy fire from the ground.

Sec. Lieut. (Hon. Lieut.) J. A. G. HASLAM, M.C. (R.F.A.) (France).—On August 10th this officer performed a very gallant action. While carrying out a contact patrol he was attacked by seven enemy scouts. Although wounded in the leg at the outset of the engagement, Lieut. Haslam, with rare courage and determination, continued to serve his machine-gun. One of the enemy aeroplanes was driven down, and the remainder dispersed. (M.C. gazetted July 26th, 1918.)

Lieut. S. W. HIGHWOOD (France).—An officer of exceptional skill and courage who, since August 8th, has accounted for nine enemy aircraft, driving down five kite balloons in flames, destroying two enemy machines, and shooting down two others out of control.

Sec. Lieut. (Hon. Capt.) A. M. F. HILL (K.R.R.C.) (France).—On September 2nd, while flying at 200 ft. altitude, this officer's machine was heavily engaged by enemy machine-guns. He located this party and boldly attacked them, driving them out of their trenches and inflicting severe casualties. Capt. Hill has always carried out his duties in a conspicuously gallant and efficient manner, and the information he has brought back has been of the greatest value.

Sec. Lieut. T. G. HOBBS (France).—A skilful and gallant officer. On August 21st this officer did six hours flying. He was twice attacked by large formations of enemy aeroplanes, but on each occasion, by skilful manoeuvre and resolute fighting, he drove them off and continued his patrol, bringing back much valuable and accurate information. On the same day he attacked enemy transport, causing great confusion and inflicting heavy casualties.

Lieut. L. N. HOLLINGHURST (Midd'x. R.) (France).—Since April 25th this officer has destroyed four enemy aeroplanes and driven down one out of control. At all times he displays great determination and cool courage, notably on September 20th, when, although his petrol tank had been shot through and his machine badly damaged, he attacked and destroyed a Fokker biplane that was stalling to fire on another member of the patrol, thereby saving the life of a brother officer. On numerous other occasions Lieut. Hollinghurst by his gallantry has saved from disaster other members of his patrol.

Lieut. (A. Capt.) E. C. HOY (France).—A bold and skilful airman who has accounted for four enemy machines and shot down a balloon in flames, displaying at all times a fine fighting spirit, disregarding adverse odds.

Lieut. D. J. HUGHES (France).—A gallant and skilful officer. On September 4th his patrol was attacked by eight Fokker biplanes. Proceeding to the assistance of one of our machines that was in difficulties, Lieut. Hughes was himself attacked by two enemy aeroplanes and driven down to 4,000 ft., his petrol and oil tanks being shot through. By skilful manoeuvring he regained our lines, pursued by one of the enemy, which, at 2,000 ft., he engaged, bringing it down in our lines.

Sec. Lieut. J. H. HUXLEY (France).—While on a recent contact patrol this officer displayed marked ability and courage. He left the ground in the early morning of September 12th under very adverse weather conditions, heavy rain falling and a strong west wind blowing. Having reached his objective, he called for flares without success, and in order to locate our troops he was compelled to descend to 200 ft. In spite of very difficult ground he succeeded in ascertaining the position of a number of our posts. The flight lasted over three hours, rain falling incessantly, and in obtaining the information Sec. Lieut. Huxley displayed a devotion to duty worthy of high praise.

Lieut. (A. Capt.) R. IVELAW-CHAPMAN (France).—This officer has rendered most valuable service in co-operation with our artillery. In these operations he displays marked skill and devotion to duty, his keenness of observation being excellent. On more than one occasion he has carried out several successful shoots in one night.

Lieut. W. J. P. JENNER (Sea Patrol, Flanders).—A bold and gallant officer, who has destroyed two enemy machines. On October 4th, whilst on a low bombing raid, he was shot through both legs. Although suffering great pain, he, with great courage and devotion to duty, continued his flight and dropped his bombs on the objective before returning to his aerodrome.

Lieut. L. A. JESSOP (Sea Patrol, Mediterranean).—An officer of fine courage and resolution. He has rendered most valuable service in bombing an important enemy town on a long-distance raid, bringing back a valuable reconnaissance report.

Lieut. (A. Capt.) R. T. JONES (France).—During recent operations this officer has been conspicuous for his bold daring in bombing enemy transport, bridges, &c., at low altitudes, in face of very heavy hostile fire, on one occasion descending as low as 150 ft. to locate his objective before commencing his attack.

Lieut. (A. Capt.) S. JONES (France).—This officer has taken part in many long-distance bombing raids, and has carried out forty solo reconnaissances, obtaining most valuable information and proving himself an officer of exceptional ability. In addition he has destroyed or driven down out of control four enemy aeroplanes.

Lieut. J. E. KENDRICK (North'd Fus.) (France).—This officer has acted as observer on numerous occasions in co-operation with our artillery and in photographic reconnaissance. By his coolness and skill under all circumstances he has gained the complete confidence of all the pilots with whom he has served, enabling them to carry out their observations and photography with full assurance that their safety from surprise attacks is insured.

Lieut. (A. Capt.) B. G. H. KEYMER (Sea Patrol, Mediterranean).—A very gallant flight leader of exceptional ability and determination. On July 24th, when on a long-distance raid, Lieut. Keymer was attacked by three hostile aeroplanes and three seaplanes. Undaunted by these heavy odds, he engaged the enemy for 35 minutes and eventually succeeded in driving them off.

Lieut. (A. Capt.) R. KING (Australian F.C.) (France).—During operations in the early part of September this officer rendered gallant and valuable service in bombing and attacking with machine-gun fire enemy billets, trains, troops, &c. In carrying out these operations he ensures success by descending in low altitudes, disregarding personal danger incurred by so doing.

Lieut. A. KITELEY (R.F.A.) (France).—This officer has displayed conspicuous skill and keenness in pressing forward with his balloon in order to keep touch with our artillery. With resolute determination he has overcome all difficulties due to adverse weather conditions and heavy hostile fire. This devotion to duty is the more creditable to this officer as he is still suffering from wounds received some time back.

Sec. Lieut. (A. Capt.) H. P. LALE (France).—A bold and courageous officer, who leads his patrol with marked skill and judgment. He has accounted for 12 enemy aeroplanes—five crashed, four shot down in flames, and three driven down out of control. On September 6th he led his patrol of nine machines to the assistance of some formations that were attacked by 30 or 40 enemy aircraft; in the engagement he and his observer accounted for two Fokkers. Eventually the enemy was driven off, five of their machines being destroyed and three shot down out of control.

Lieut. R. K. MCCONNELL (France).—This officer has accounted for five enemy machines—destroying two and driving down three out of control, proving himself a gallant fighting airman. He has also shown conspicuous bravery in attacking troops and transport.

Sec. Lieut. (A. Lieut.) J. McDONALD (Observer, No. 9 Sqdn.) (France).—This officer invariably sets a fine example of courage and resolute determination. On August 24th, in response to an S.O.S. call, he penetrated far behind the enemy lines at a height of under 1,000 ft., subjected during the whole time to very heavy hostile fire. Having reached his objective, he attacked the enemy with great effect, inflicting numerous casualties.

Lieut. V. H. McELROY (Can. Engrs.) (France).—This officer has been conspicuous for his courage and determination in attacking enemy troops, transport, huts, &c., on bombing raids. Carrying out this service at low altitudes his success has been marked, and he has inflicted heavy casualties on the enemy, his machine being frequently badly shot about owing to the heavy hostile fire which he had encountered.

Capt. D. R. G. MACKAY (Independent Force, France).—An officer of conspicuous ability and determination, who, during the last four months of the fighting, has taken part in 22 bombing raids and three photographic reconnaissances, acting as leader on seven occasions. On October 15th he volunteered to carry out alone a bombing attack on an enemy aerodrome; low clouds and mist compelled him to fly at low altitudes varying from 800 ft. to 1,000 ft. Having successfully reached his objective, he obtained two direct hits from a height of 40 ft., and stampeded horses with machine-gun fire. The cool courage and marked initiative shown by Capt. Mackay in this operation merits high praise.

Lieut. (A. Capt.) W. E. G. MANN (France).—This officer has led many patrols into action, and invariably displays marked fearlessness and ability, setting a fine example to other pilots. He has accounted for nine enemy aeroplanes, and in these combats his success has been largely due to his skill in manoeuvre and bold daring in closing to short range with the enemy.

Lieut. (A. Capt.) W. R. MAY (France).—This officer has carried out numerous offensive and low-bombing patrols, proving himself on all occasions a bold and daring pilot. He has accounted for seven enemy machines; two of these he destroyed in one flight. His keenness and disregard of personal danger is worthy of the highest praise.

Lieut. H. A. S. MOLYNEUX (Canadian Forces and 56th Sqdn) (France).—During the August operations this officer rendered conspicuous good service on low-flying patrols, causing much damage and inflicting heavy casualties, showing brilliant dash and resolution. He is a bold fighter in the air, and has accounted for two enemy aeroplanes.

Lieut. (A. Capt.) G. N. MOORE (France).—An officer of high courage and ability who has rendered most valuable services in co-operation with our artillery, notably during the operations September 1st to 5th, when, in spite of adverse weather conditions, necessitating flying at a very low altitude, he located 66 active hostile batteries and directed fire on a number of other targets. The skill and accuracy displayed by Capt. Moore during these operations was exceptional and of the greatest value.

Lieut. M. A. NEWNHAM (France).—This officer has taken part in several night-bombing raids and in 102 offensive patrols, many of which he has led with ability and success. On the night of September 23rd-24th Lieut. Newnham carried out a very successful long-distance raid on an enemy aerodrome. Owing to heavy rain and a strong west wind he had difficulty in reaching his objective. Undeterred by this, he succeeded, and effectively bombed the aerodrome, obtaining two direct hits on a large Zeppelin shed. He then attacked other objectives descending to ground level to do so. He returned to our lines after a 2½ hours' flight.

Sec. Lieut. F. S. OCCOMORE (France).—On August 31st this officer carried out a most successful contact patrol over the front of two divisions. The area was twice covered at an altitude varying from 150 to 300 ft., and most valuable information was obtained. During these operations the machine was subjected to very heavy machine-gun fire, being hit in 20 places, and it was also attacked by an enemy aeroplane. On other occasions Sec. Lieut. Occomore has displayed the same courage and determination in carrying out reconnaissances, invariably bringing back valuable and reliable reports.

Sec. Lieut. G. L. PARGETER (R. Fus.) (France).—A very gallant officer. On two occasions (August 10th and September 1st), when on patrol duty over the enemy lines, the petrol tank was hit by hostile fire. With rare courage and presence of mind Sec. Lieut. Pargeter climbed out on to the bottom plane and plugged the hole with his glove. Remaining on the plane, he held the glove in position, thus enabling the pilot to bring the machine back to our lines in safety.

Lieut. C. W. PAYTON (Sea Patrol, Flanders).—A gallant and skilful pilot who has himself destroyed two enemy machines and driven down two out of control. Assisted by other pilots, he has also accounted for four others. On August 23rd, in a bombing raid, one of our machines, compelled to descend owing to engine trouble, was heavily engaged by anti-aircraft fire. Observing this, Lieut. Payton, with great courage, attacked the hostile batteries at a very low altitude, silencing several of them.

Lieut. (A. Capt.) H. A. PEARSON, M.C. (Italy).—During the last ten months this officer has displayed exceptional keenness and ability in carrying out photography and trench reconnaissance. Frequently handicapped by adverse weather conditions, and in very difficult country, he has rendered most valuable service in clearing up obscure situations. On June 14th, in low clouds and mist, he took 35 successful photographs previous to an enemy

attack. Those very materially aided our operations. (M.C. gazetted December 11th, 1916.)

Lieut. W. R. PHILLIPS (Lond. R.). (France).—Since joining his balloon wing this officer has done over 350 hours in the air, and during recent operations has displayed gallantry, determination, and devotion to duty worthy of high praise. On September 27th, Lieut. Phillips made a continuous flight of 13 hours, rendering very valuable service.

Lieut. C. F. PINEAU (Sea Patrol, Flanders).—An officer of exceptional merit, who sets a very high example of courage and devotion to duty to other pilots. He has destroyed four enemy machines and driven down two out of control. After one of these combats, on October 8th, in which he destroyed a Fokker biplane, he was reported missing.

Lieut. B. G. PORTER (France).—On September 5th this officer's balloon and winch were heavily shelled when the balloon was 500 ft. from the ground. Six of his winch and balloon party were killed and ten wounded. His balloon being badly damaged, he directed that it should be let up to 1,500 ft. This was done, and the observers were enabled to parachute successfully. The presence of mind displayed by Lieut. Porter undoubtedly saved the lives of his observers, and his cool courage set a fine example to his men, keeping them at their posts.

Lieut. J. R. F. RANDELL (Sea Patrol, Mediterranean).—This officer has shown great gallantry on several occasions, notably on August 10th, when, having driven down a hostile machine, he attacked a train at 500 ft. altitude, compelling the drivers to jump out. He then engaged a machine leaving its aerodrome, causing it to crash. Descending to 20 ft., he obtained a valuable reconnaissance of the hangars. During the whole time he was subjected to heavy anti-aircraft and machine-gun fire.

Lieut. (A. Capt.) A. W. E. REEVES (Sea Patrol, Flanders).—This officer has done continuous good work during the past 4½ months, notably in the recent advance, when, between September 28th and October 5th he carried out 13 raids on enemy railway junctions. A bold and determined fighter, he has taken part in 64 raids, his observer and himself shooting down four enemy aeroplanes.

Sec. Lieut. A. A. ROBINSON, M.C. (L'pool R.). (France).—On September 6th this officer's balloon was attacked by enemy aircraft and riddled with bullets, and he was compelled to make a parachute descent. On landing he at once obtained permission to re-ascend in another balloon and carry on his observation, displaying marked determination and devotion to duty. During the last month Sec. Lieut. Robinson has been forced to parachute three times. (M.C. gazetted September 26th, 1917.)

Lieut. O. J. ROSE (France).—A very gallant officer, who has accounted for nine enemy aeroplanes. On September 29th he observed an enemy scout attacking some of our machines; engaging it, he drove it down from 15,000 ft. to 6,000 ft., when it fell in flames. On his return journey he attacked and destroyed an enemy two-seater.

Maj. G. S. SANSON, M.C. (France).—A very able officer, who has completed nearly 600 hours of observation duty from balloons. He handled the balloon section under his command with consummate skill, notably on September 18th when he advanced his section to forward positions in a manner deserving of high praise. (M.C. gazetted June 18th, 1917.)

Capt. G. J. SCOTT, R.F.A. (France).—A skilful and gallant officer, with a fine record of good service. On August 23rd he carried out a most successful contact patrol. Flying at a height of less than 500 ft., he obtained a most complete and accurate report of the whole corps front. During this patrol he engaged enemy troops, causing heavy casualties. His observer was wounded and his machine badly shot about.

Lieut. (A. Capt.) W. A. SCOTT, D.S.C. (France).—This officer has completed 63 raids and has dropped over 50 tons of bombs on various objectives, causing very material damage. The courage, keenness, and skill Capt. Scott displays on these raids is remarkable, and affords a fine example to his squadron. (D.S.C. gazetted November 2nd, 1917.)

Lieut. H. E. SEARSON (France).—This officer has shown conspicuous courage and ability when on contact patrols, notably on September 3rd, when he made a most valuable and detailed report of a certain area, in consequence of which report our patrols were pushed forward in pursuit of the retreating enemy.

Lieut. (Hon. Capt.) P. J. SLATER (S. Staff. R.). (France).—During the operations in September at every advance this officer went forward with his balloon across difficult country, keeping up with and often in front of, our artillery. Subjected to heavy bombing, shell fire, and frequent attacks by enemy aircraft, Capt. Slater, with cool courage and marked ability, continued to carry out observations for the artillery, his balloon at times being severely holed.

Lieut. D. R. SOLOMON (R.F.A.) (France).—During the operations between August 21st and October 1st, this officer has spent over 70 hours in the air in all weathers, and has afforded valuable assistance to our artillery. His gallantry, initiative, and skill in handling his balloon has been most noteworthy.

Sec. Lieut. A. T. SPRANGLE (France).—A skilful observer, of great determination. Between September 1st and 5th, under most adverse weather conditions and in face of hostile attacks in the air, Sec. Lieut. Sprangle directed fire on 61 enemy batteries, besides infantry, mechanical transport, and artillery on the move. In this service he displayed marked ability, and the successful results were largely due to his keenness and devotion to duty.

Lieut. (A. Capt.) S. STANGER, M.C. (Italy).—A dashing and determined leader who has frequently engaged enemy formations in superior numbers, inflicting heavy casualties. On October 4th he, in company with another machine, engaged six enemy aeroplanes; three of these were destroyed, Capt. Stanger accounting for two. In all, he has destroyed five enemy machines, displaying on all occasions great courage and skill. (M.C. gazetted September 16th, 1918.)

Lieut. (A. Capt.) R. STEPHENSON (Ches. R.). (France).—During recent operations this officer has been conspicuous for courage, skill and perseverance, markedly on September 4th, when he carried out a special reconnaissance to ascertain the exact locality of the enemy's position, which information was urgently required; flying at 200 ft., his machine was subjected to heavy fire, but with fine courage and determination he completed the reconnaissance, rendering a most valuable and accurate report of the situation.

Lieut. A. W. STEVENSON (France).—This officer has carried out 85 bombing raids, often in most adverse weather conditions. In this duty he has done very valuable service, displaying on all occasions fine gallantry and devotion to duty.

Lieut. (Hon. Capt.) A. STOREY (France).—On September 26th, while taking part in a general engagement, he was attacked by six enemy machines; two of these at the outset withdrew, but Captain Storey, with great courage, took the offensive against the remaining four, driving them down from 15,000 to 5,000 feet. During the engagement he was wounded in both legs and his elevator control was almost shot away; he nevertheless maintained the combat till his engine was damaged, when he withdrew, having shot down one of his opponents with smoke issuing from his fuselage. A very gallant action, the more praiseworthy that Capt. Storey was new to service flying, this being the second time he had been over the lines.

Lieut. (A. Capt.) T. S. SYMONS (R. Sussex R.). (France).—This officer has rendered most valuable service on contact patrols, his reports being invariably most clear and accurate. On many occasions he has had to fly through our own and the enemy barrage, but, daunted by no difficulty or danger, he successfully performs every duty allotted him.

Lieut. C. R. THOMPSON (France).—This officer has destroyed three enemy machines and three kite balloons. At all times he displays utter disregard of personal danger, notably so on September 15th, when, in company with another machine, in face of a heavy barrage, he dived to attack a kite balloon. As he dived he was attacked from the rear by four Fokkers. Disregarding them, he continued to dive, and shot down the balloon in flames. He then, although wounded in the face and shoulder, turned and engaged the Fokkers, who had in the meantime been reinforced and numbered 12. Finally, after a stern contest, he made his way back to the aerodrome and rendered his report.

Sec. Lieut. J. TOWN (France).—On September 2nd, this officer performed very gallant service on contact patrol. Flying at a height varying from 400 to 1,000 ft., he was subjected to very heavy fire from machine and anti-aircraft guns, and was harassed by an enemy scout, which he engaged and drove off. Despite this determined opposition, he completed his patrol and brought back a full and detailed report, which proved of the greatest value.

Lieut. F. D. TRAVERS (Herts. Yeo.). (Salonica).—A gallant and able officer who has displayed on many occasions boldness in attack, never hesitating to engage the enemy as opportunity occurs. On June 1st he, in company with two other pilots, attacked a hostile formation of 12 machines; four of these were shot down and the remainder driven off.

Lieut. S. TURNER (France).—A gallant and zealous pilot, who has rendered valuable service on photographic and contact patrols. On the morning of September 20th Lieut. Turner carried out most successful contact patrol, locating the position of our troops in face of very heavy hostile fire and under adverse weather conditions. Owing to a hostile counter-attack the situation that evening again became obscure, and this officer carried out a second patrol over the same area. Owing to his Klaxon horn being damaged by the intense fire to which he had been subjected he was compelled to descend to a very low altitude to ascertain the position of our troops. On this occasion Lieut. Turner displayed courage and skill of a high order.

Capt. L. J. WACKETT (Australian F.C.) (France).—During recent operations this officer has rendered conspicuous service in taking oblique photographs and in supplying our troops with ammunition. On September 25th, flying at only 1,500 ft., he obtained a complete series of oblique photographs of an area several miles behind the enemy front line; although his radiator was hit, he, by skilful piloting, succeeded in landing his machine safely at his aerodrome.

Lieut. G. W. WAREING (France).—A bold and courageous airman who has destroyed four enemy aeroplanes, and shot down in flames a hostile balloon. He is conspicuous for zeal and devotion to duty.

Lieut. E. F. WARING (Sea Patrol, North Sea).—Whilst on patrol on August 28th this officer observed a hostile submarine submerged, apparently awaiting one of our convoys that was in the vicinity. Skilfully manoeuvring into position, he released a 520 lb. bomb, which detonated about 30 ft. from the bow of the enemy craft. Bubbles and oil rose to the surface, and it has since been established that the submarine was destroyed.

Lieut. J. W. WARNER (France).—This officer has carried out numerous offensive patrols and low-flying attacks on enemy ground targets, displaying on all occasions the real offensive spirit, and, when acting as flight commander he has proved himself to be an excellent leader, full of initiative and courage. He has accounted for six enemy aeroplanes.

Lieut. (A. Capt.) A. T. WHEALEY, D.S.C. (France).—This officer has shown a very high standard of efficiency. Untiring, and full of initiative, he sets a fine example to the younger pilots. During the recent advance he has carried out daring reconnaissances at very low altitudes, invariably bringing back valuable information. He is a bold fighter in the air, having accounted for five enemy machines. (D.S.C. gazetted April 26th, 1918; Bar to D.S.C. June 21st, 1918.)

Lieut. (A. Capt.) J. B. WHITE (France).—A fine fighting pilot who has accounted for eight enemy aeroplanes. He has led numerous offensive and low bombing raids, and by his able and daring leadership has achieved great success with a minimum of casualties to his patrol.

Lieut. H. WICKETT (Sea Patrol, Mediterranean).—A most persevering and courageous pilot, who, undeterred by difficulties, invariably reaches his objective. He has taken part in long-distance raids over an important enemy town, and has displayed marked skill in so manoeuvring his machine that most excellent results have been obtained from bombing and photographic reconnaissances.

Lieut. B. S. WILCOX (France).—An officer who on all occasions shows keenness and devotion to duty of a high order. He has carried out numerous contact patrols, bringing back at all times very complete and valuable information. Handicapped frequently by adverse weather conditions, and in face of severe opposition from aircraft and machine-gun fire, he invariably displays praiseworthy perseverance and courage in carrying out his allotted task.

Lieut. (A. Capt.) R. O. WILLIAMS (France).—During operations in September this officer has been conspicuous for his ability, gallantry, and untiring energy in carrying out contact patrols. Undeterred by heavy hostile fire or adverse weather conditions, Capt. Williams has almost invariably succeeded in locating our troops and in obtaining valuable information.

Lieut. E. C. WILLIS (France).—On October 2nd this officer carried out an extremely valuable contact patrol, flying for two hours at an average height of 300 ft. Whilst employed on this duty he assisted in repelling a counter-attack, vigorously engaging the enemy with machine-gun fire from a height of 50 ft. During the combat his machine was struck by a shell; notwithstanding this he continued his patrol, sending in three most important reports as to the position of our advancing troops. On landing at his aerodrome his machine collapsed. A fine example of courage and devotion to duty.

Lieut. C. M. WILSON (France).—Bold in attack, this officer never hesitates to join in an engagement with the enemy, regardless of their numerical superiority. On August 18th, with four other machines, he attacked a large hostile formation. Five enemy machines were destroyed, Lieut. Wilson accounting for one. In all he has four machines and one balloon to his credit.

Lieut. J. R. S. YOUNG (Sea Patrol, Mediterranean).—A most skilful and gallant observer. This officer has taken part in long-distance raids over an important enemy town, and has obtained most valuable information and photographs under very difficult conditions, displaying marked ability.

Lieut. H. R. HERN (France); Sec. Lieut. A. A. TUTTE (France).—On the night of September 20th-21st, Lieut. Hern, whilst gliding down to bomb a town, was wounded in the shoulder; he, nevertheless, dropped his bombs with good effect. On the return journey, facing a very strong wind, he became exhausted and well-nigh fainted. Seeing his condition, Sec. Lieut. Tutte, the observer, with great presence of mind and cool courage, climbed on to the cowl and held the joy stick, and the machine was safely landed. An exhibition of brave determination and devotion to duty on the part of these officers, and deserving of high praise.

Bar to the D.F.M.

67162 Sgt.-Obsr. A. NEWLAND, D.F.M. (Enfield Wash) (France).—This non-commissioned officer sets a splendid example of courage, skill and determination to the other non-commissioned officers of his squadron. During the month of August he crashed six enemy machines. (D.F.M. gazetted September 21st, 1918.)

Distinguished Flying Medal

J/70544 Sgt. Obsr. G. BARLOW (Fallowfield, Manchester) (Sea Patrol, Flanders).—This non-commissioned officer has taken part in 50 raids, and is

a gallant and skilful observer. On September 28th he was engaged in four raids, encountering a large formation of enemy aeroplanes on the last. In the combat he was wounded in both legs, but notwithstanding this, he and his pilot accounted for two of the enemy.

52874 Sgt.-Mech. J. H. BOWLER (Notting Hill, W.) (France).—A most accurate and skilful observer who has displayed great courage in many engagements, notably on September 5th, when his formation was attacked by a large number of Fokker biplanes. Wounded early in the engagement, he continued to serve his gun with coolness and courage, killing the pilot of one of the attacking planes. On his return he gave a clear and valuable reconnaissance report before being evacuated to hospital.

207112 Sgt.-Mech. L. A. CORNES (Folkestone) (Sea Patrol, Mediterranean).—As gunlayer and observer this non-commissioned officer has displayed marked gallantry and skill deserving of high praise. His conduct on July 24th, when observer to Lieut. Keymer, was particularly noteworthy. Engaged against a greatly superior force his gun jammed; keeping cool and collected during a 2,000 ft. spin, he cleared the jamb and brought his gun into action again.

202839 Sgt.-Mech. (Pilot) L. A. DELL (Hanwell, S.W.) (Sea Patrol, Flanders).—This non-commissioned officer has taken part in over 30 raids. He is an exceptionally keen observer, and a very good navigator. During recent operations he has been conspicuous for his skill in dropping bombs, causing heavy loss to the enemy.

100425 Sergt.-Mech. J. GRANT (Sandbank, Argyllshire) (France).—A gallant and capable non-commissioned officer who has accounted for six enemy aeroplanes. On September 1st, whilst on a bomb raid, his formation was attacked by 15 Fokker biplanes and five triplanes. In the severe fighting that ensued Sgt. Grant served his gun with exceptional skill, crashing one enemy machine, and it was largely due to his good shooting that the enemy were eventually driven off.

20261 3rd A.M. (W.) F. G. HAYWARD (Corie Mullen, Dorset) (Sea Patrol, Irish Sea).—A most reliable and skilful wireless operator who has done excellent work as an observer on seaplane patrols. His consistent good work deserves high praise.

S/35453 Sgt.-Mech. M. JONES (Cricklewood, N.W.) (France).—On September 16th this non-commissioned officer displayed exceptional courage and devotion to duty. In an engagement with a Fokker formation he was wounded in the arm; not realising this, the pilot directed Sgt. Jones to climb on to the right wing to steady the machine, which was almost out of control, owing to the aileron controls being shot away, and was side-slipping down over enemy territory. This he did, and the pilot regained control of the machine,

and landed safely at the aerodrome. By this time Sgt. Jones was almost fainting from loss of blood.

232650 2nd A.M. (W.T.) B.E.G. TAPLIN (Southampton) (Sea Patrol, Mediterranean).—This airman has rendered consistent good service as observer on anti-submarine patrols, having completed 200 hours in the air since April 1st, during which period he has bombed three hostile submarines.

Foreign Decorations

The King has granted unrestricted permission for the wearing of the under-mentioned decorations, conferred on the officers indicated in recognition of valuable services in connection with the War:—

CONFERRED BY THE GOVERNMENT OF THE FRENCH REPUBLIC.

Croix de Guerre, with Palme.

Maj. (Actg. Lieut.-Col.) A. C. Maund, D.S.O., 8th Can. Inf. and R.A.F.; Lieut. (Actg. Capt.) S. G. Smith; Lieut. (Actg. Capt.) A. H. Flower.

CONFERRED BY THE GOVERNMENT OF ITALY.

Croce di Guerra.

Lieut. (Hon. Capt.) G. F. Meager.

CONFERRED BY THE GOVERNMENT OF BELGIUM.

Maj. (Actg. Lieut.-Col.) A. V. Holt, D.S.O. (Officier de l'Ordre de la Couronne).

Maj. the Hon. E. A. Stonor (Chevalier de l'Ordre de Léopold).

Capt. F. G. Hogarth (Chevalier de l'Ordre de la Couronne).

CONFERRED BY THE GREEK GOVERNMENT.

(For services at Thasos.)

The Cross of Military Merit.

Surg. L. B. Stringer, R.N., att'd. to R.A.F., Limenaria Hospital, Thasos; Mrs. L. O'I. Doughty-Wylie, M.B.E., Matron of Limenaria Hospital, Thasos.

Air Force Cross

Capt. (Actg. Maj.) A. S. C. MacLaren, M.C. (Egypt); Lieut. K. M. Pennington (Mesopotamia).

Air Force Medal

213223 Sgt.-Mech. R. G. Goldfinch (Fielding, New Zealand); 224802 1st Air-Mech. J. A. Francis (Stapleford, Notts).

Meritorious Service Medal

59991 Pte., 1st Cl., S. A. Seaman (Gislingham, Suffolk) (France); 281161 Pte., 2nd Cl., C. A. Reeder (Huddersfield) (France); 21707 1st Air-Mech. L. Betteridge (Monmouth) (France); 73213 Actg. Cpl. G. Clifford (Canada).



The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

THE FLYING SERVICES FUND

(Registered under the War Charities Act, 1916)

Administered by the Royal Aero Club

For the benefit of Officers, Non-Commissioned Officers and Men of the ROYAL AIR FORCE who are incapacitated on Active Service, and for the Widows and Dependants of those who are killed.

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Subscriptions

	£	s.	d.
Total subscriptions received to Dec. 3rd, 1918	13,994	4	5
Officers and Men of 4th Wing, Headquarters, R.A.F., Netheravon (Second contribution) ..	3	3	2
Total, December 10th, 1918 ..	13,997	7	7

Offices: THE ROYAL AERO CLUB,

3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

The R.A.F. in Italy

In the despatch dated November 15th, 1918, from General the Earl of Cavan, K.P., K.C.B., M.V.O., Commanding-in-Chief, British Forces in Italy, there is the following mention of the R.A.F.:—

"The Royal Air Force, under the command of Col. P. B. Joubert de la Ferte, D.S.O., took a very prominent part in the battle, harassing the enemy's retreat so effectually that many batteries and thousands of prisoners fell into our hands that would have otherwise escaped."

The England to Cairo Flight

BRIG.-GENERAL A. E. BORTON, D.S.O., who took part in the Cairo to Baghdad flight, details of which were published last week, has another and far longer flight to his credit, having been the officer responsible for the Kent to Cairo flight in August last, as recorded in our issue of August 15th last.

The General was on leave from Palestine, and decided, if possible, to return to duty by air. Having obtained the necessary permission, he flew one of the latest types of Handley-Page machines from an aerodrome in Lincolnshire to one on the south-east coast. Here he was joined by Major A. S. C. MacLaren, M.C., and two mechanics, and within five days reached Cairo without incident, the distance flown from Kent being about 2,140 miles as the crow flies.

This was the longest air journey yet accomplished. It may be compared with the London to Constantinople flight made by Commander Savory on a Handley-Page machine last December (1,575 miles) and the Cairo-Baghdad flight (about 840 miles). The distances here given are all as measured in a direct line, though in each case, of course, a more or less indirect route was followed.

The R.A.F. and Missing Officers and Men

THE Secretary of the Air Ministry makes the following announcement regarding missing officers and men of the Royal Air Force:—

"Every effort is being made to trace officers and airmen who have become missing from time to time, and of whom no further information has been received.

"Relatives and friends, having any information concerning individual officers or men, are requested to forward it to the Air Ministry, when every effort will be made to locate the officer or man concerned; but it should be appreciated that owing to the varying circumstances in regard to cases of missing personnel, some considerable time must elapse before information of a satisfactory or conclusive nature can be received. Relatives are, however, assured that when any definite information is obtained it will be transmitted to the next of kin immediately."

THE HALBERSTADT TWO-SEATER TYPE C.L. IV

[Issued by Technical Department (Aircraft Production), Ministry of Munitions]

THIS machine, which is allotted G/5Bdr./22, landed near Chipilly on August 23rd, 1918. Dates stamped on the main planes give the date of construction as July, 1918.

It is very similar in design and construction to the C.L. II type, which has already been fully reported upon (see issue of "FLIGHT" for October 10th), but many detail differences are incorporated.

Below is a comparative list of the principal dimensions of both C.L. II and C.L. IV types:—

	C.L. IV	C.L. II
Span of upper plane	35 ft. 2½ in.	35 ft. 3½ in.
Span of lower plane	34 ft. 9½ in.	34 ft. 11 in.
Chord of upper plane	5 ft. 2½ in.	5 ft. 3½ in.
Chord of lower plane	4 ft. 3½ in.	4 ft. 3½ in.
Gap, maximum	4 ft. 4 in.	4 ft. 0 in.
Gap, minimum	4 ft. 0 in.	3 ft. 8½ in.
Dihedral angle of lower plane ..	2 deg.	2 deg.
Horizontal dihedral of main planes	4 deg.	4 deg.
Total area of main planes	308 sq. ft.	310 sq. ft.
Area of each aileron	12 sq. ft.	12 sq. ft.
Area of aileron balance	2.0 sq. ft.	2.0 sq. ft.
Area of tail planes	16 sq. ft.	13.6 sq. ft.
Area of elevator	13.6 sq. ft.	12.4 sq. ft.
Area of fin	11.4 sq. ft.	6.4 sq. ft.
Area of rudder	7.9 sq. ft.	7.9 sq. ft.
Area of rudder balance	1.0 sq. ft.	1.0 sq. ft.
Horizontal area of body	36 sq. ft.	44 sq. ft.
Vertical area of body	41 sq. ft.	52.8 sq. ft.
Length overall	20 ft. 11½ in.	24 ft. 0 in.
Engine	180 Merc.	180 Merc.
Capacity of petrol tanks	34 galls.	34 galls.
Capacity of oil system	4 galls.	4 galls.
Crew	Two	Two
Guns	One fixed and one movable	

Wings

The wings, both in disposition and construction, are substantially the same as in the former machine. The characteristic wash-out at the root of the lower planes is even more pronounced than was the case in the C.L. II machine. It will be seen from photograph A that the rear spar is bent and twisted by this wash-out. The exact shape of the trailing edge of one of the lower planes is shown in the scale drawings.

Fig. 1 gives a section of the upper wing drawn to scale, and Fig. 2 a comparison of the upper aerofoil of the C.L. IV with the R.A.F. 14 section, which is dotted. From Fig. 1 it will be noticed that the 3-ply surrounds to the spars are still employed. They are drawn to scale in Fig. 3.

The ailerons remain unaltered in the C.L. IV machine, and this is also true of the interplane and centre section struts.

The attachment of upper wings to centre section and of lower wings to fuselage are unaltered, except that the tube which, in the earlier machine, passed right across the fuselage

and connected the spars of the port and starboard lower wings is no longer found. Its place is taken by two fuselage fittings of the type shown in Fig. 4.

Fuselage

Although the fuselage of the C.L. IV machine is very like that of the C.L. II type, the machine now being described has a body which is practically 3 feet shorter than that of the earlier machine.

Tail planes and Skid

It is in these components that the greatest differences between the two types are found. The tail plane is now in one piece, and is laid across the rear of the fuselage, and attached there by the bolts shown in Fig. 6. The undivided elevator is now balanced, and the aspect ratio of the whole horizontal tail is larger than was the case in the earlier model. Besides this the actual area is greater. (It has been remarked that the C.L. IV body is 3 feet shorter.)

The fin and rudder were not salvaged, and comparison is therefore not possible, but it is clear from the fuselage design that the fin is a separate unit simply attached to the body, and not an integral part of it. It is also established that the rudder post is now found in the same vertical plane as the leading edge of the elevator. It will be remembered that the rudder post, in the C.L. II type, was fixed more than a foot forward of the elevator fulcrum.

The inverted camber of the C.L. II tail plane is now abolished, and a symmetrical camber substituted, and the rather elaborate tail skid of the earlier model has been simplified to the type found in the modern L.V.G. biplanes. In this type the skid is entirely exposed, and is pivoted on the lower edge of a small triangular fin under the tail plane. (See photograph and general arrangement drawings.)

Undercarriage

The landing gear is substantially the same as in the C.L. II machine, but, as may be seen in Fig. 5, two compression tubes now run parallel to the axle, instead of one, as before.

Fittings

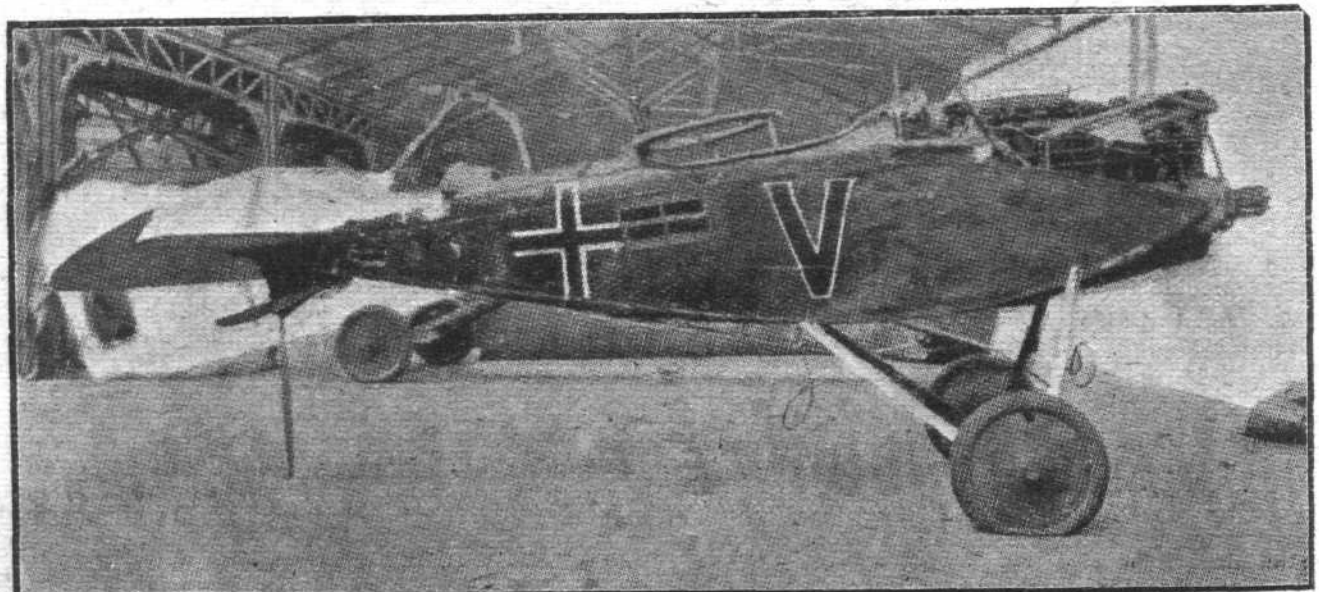
The gun ring has been additionally stayed in front, but otherwise remains the same. It was fitted with a Parabellum gun.

Two fixed guns of the Spandau type are arranged for, one each side of the camshaft, but only the one on the starboard side was fitted at the time of capture.

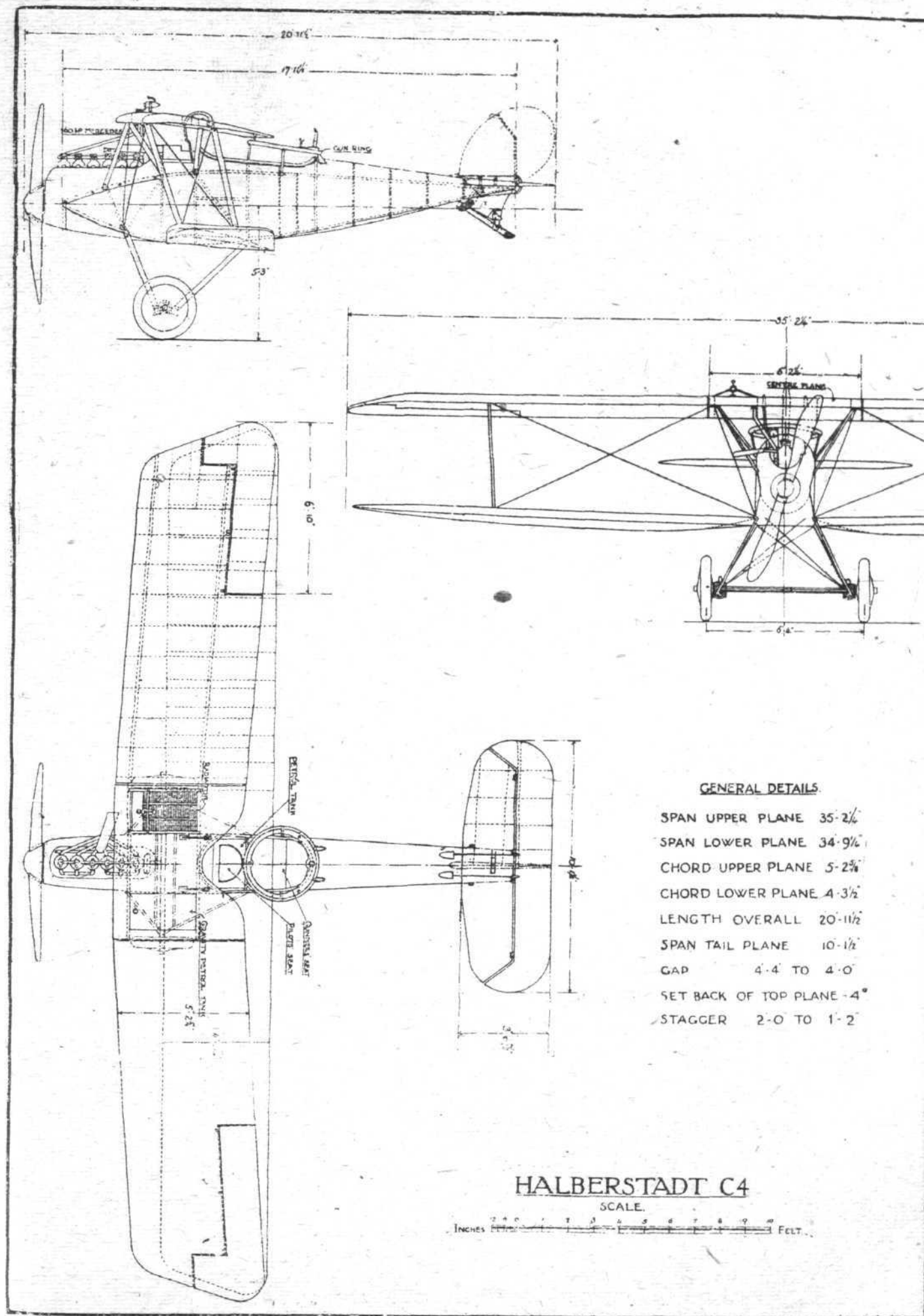
A ten-loop Very cartridge belt is tacked to the top of the fuselage just behind the cockpit—it may be seen in the photograph—and a total of twelve light hand grenades may be carried in the wooden racks, one of which may be seen on either side of the fuselage.

The practice of enclosing the control wires in the cockpit is still continued, but aluminium shields are used instead of the more permanent three-ply construction.

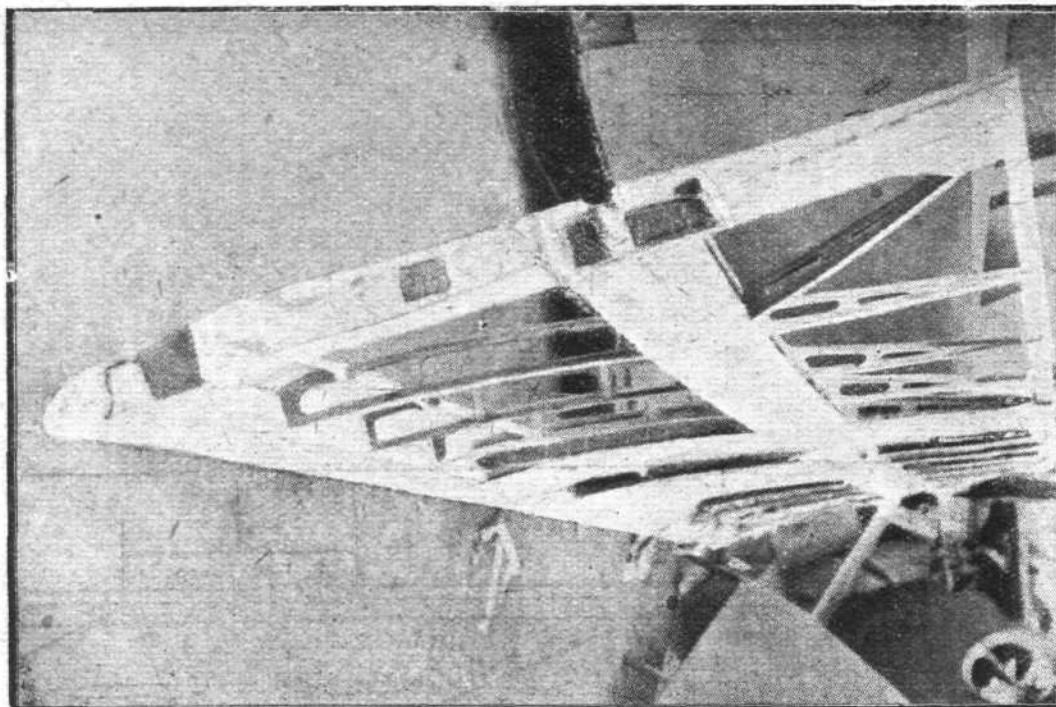
The machine is internally wired, but no wireless apparatus



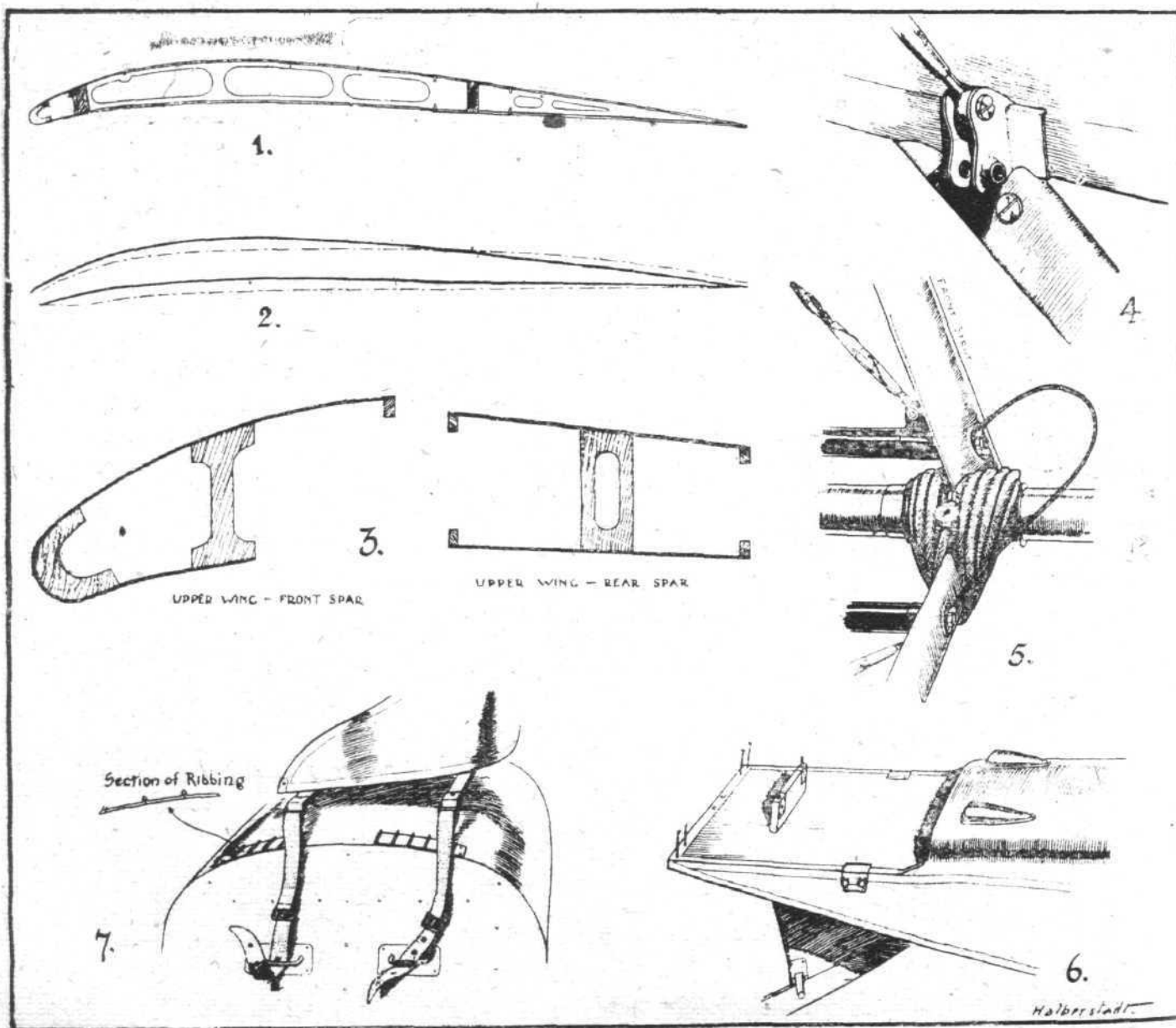
Side view of dismantled Halberstadt C.L. IV.



General arrangement drawings of the Halberstadt C.L. IV.



Photograph showing internal construction of lower plane of Halberstadt C.L. IV. Notice the pronounced wash-out.



Some constructional details of the Halberstadt C.L. IV.—1. Top plane wing section. 2. Comparison between the section shown in 1 and the R.A.F. 14. 3. The three-ply surrounds to the spars, drawn to scale. 4. Fuselage fitting for bottom plane. 5. Shock absorber and undercarriage cross-tubes. 6. Tail plane attachment. 7. Adjustable mounting of seat.

was on board at the time of capture. The dynamo bracket is no longer to be found alongside the engine, but is now on the front port undercarriage strut, and is driven by a propeller.

The pilot's seat is a shallow three-ply bucket, which rests on two cross pieces of wood supported on ribbed brass strips sweated to the top of the petrol tank, thus providing a fair amount of adjustment. This is the subject of a sketch (Fig. 7).

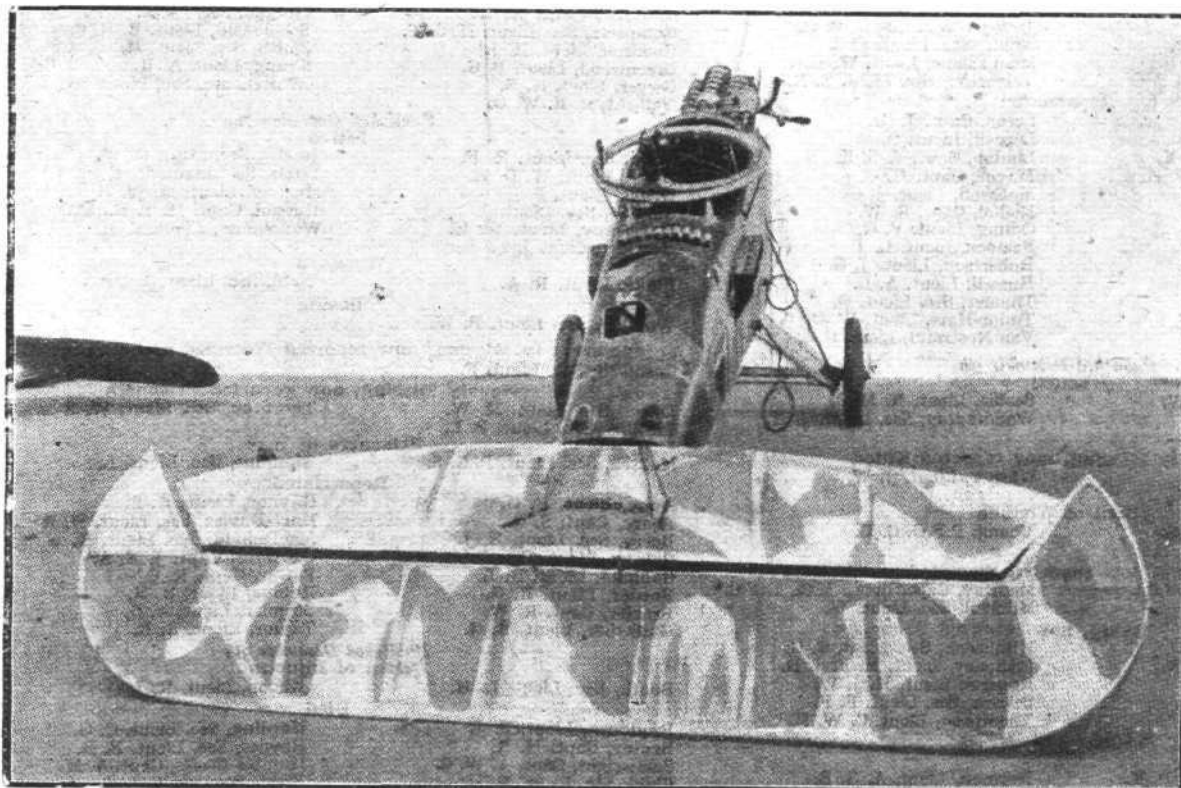
The fabric is throughout of the usual colour-printed type.

Schedule of Weights, Halberstadt, C.L. IV.

	lbs.	ozs.
Body, with undercarriage, engine, Spandau gun, petrol tank, gauges, and controls	1220	0
Engine (dry), 180 Mercedes .. .	635	0
Upper wing, complete (no bracing wires) .. .	70	8
Lower wing, complete (with bracing wires) .. .	64	0
Centre section, complete (with struts and wiring) .. .	108	8

Gravity petrol tank .. .	11	4
Radiator .. .	36	0
Centre section strut (Vee) .. .	5	3
Centre section strut (straight) .. .	2	4
Interplane strut (front), with cable .. .	4	8
Interplane strut (rear), with cable .. .	4	0
Undercarriage, complete, approximately .. .	112	0
Shock absorber (one) .. .	4	6
Axle, with bobbins and caps .. .	14	8
Wheel, complete with tyre .. .	20	4
Tyre and tube .. .	8	12
Leading spar of wings (per foot run) .. .	1	4
Trailing spar of wings (per foot run) .. .	0	14½
Tail plane and elevator (covered) .. .	25	0

The aeroplane is in the Enemy Aircraft View Rooms, Islington, and may be seen on production of a pass, to be obtained by writing to:—The Controller, Technical Department, Ap.D. (L.), Central House, Kingsway, W.C. 2.



Rear view of tail and fuselage of Halberstadt C.L. IV.

Thirteen Months' Bombing

OFFICIAL figures of bombing raids into Germany show that during a period of thirteen months 709 raids were made—an average of 54 a month.

The systematic bombing of military objectives in Germany by Royal Air Force squadrons began in October, 1917, although the units specially employed upon this work were not known as the R.A.F. Independent Force until General Sir Hugh Trenchard was appointed to take command on June 6th, this year. The period covered by the raids, down to the conclusion of the Armistice, is therefore almost exactly 13 months. The objectives were:—

Large German towns .. .	374
Aerodromes established for defence of Rhine .. .	209
Other military objectives in Alsace-Lorraine and Germany .. .	126

Total .. . 709

It will be noted that more than half of the total number of raids were upon important German towns, many of them situated more than 100 miles from the base of the R.A.F. Independent Force at Nancy. Indeed, the average distance covered by each squadron (out and home) varied from 120 to 160 miles per raid, whilst it was no uncommon thing for the weekly average to rise to the figures of close upon 200 miles per raid during periods favourable to long-distance bombing.

The following table gives the names of the towns bombed and the number of the raids upon them:—

Raids		Raids	
Metz-Sablon .. .	91	Hagondange .. .	6
Thionville .. .	52	Dillingen .. .	5
Mannheim .. .	29	Metz .. .	5
Burbach .. .	17	Kreutzwald .. .	4
Saarbrücken .. .	17	Landau .. .	4
Trèves .. .	17	Pirmasens .. .	4
Offenburg .. .	12	Stuttgart .. .	4
Karlsruhe .. .	12	Zweibrücken .. .	4
Kaiserlautern .. .	10	Cologne .. .	3
Karlsruhe .. .	9	Mainz .. .	3
Coblenz .. .	8	Rombach .. .	3
Sarrebourg .. .	7	Völklingen .. .	3
Ehrange .. .	6	Wadgassen .. .	3
Frankfort .. .	6		

The following places were each bombed twice: Baden, Duren, Lahr, Maizières, Oberndorf. The following were each bombed once: Bonn, Darmstadt, Forbach, Freiburg, Hagenau, Heidelberg, Herzing, Leiningen, Mertzig, Moulins-les-Metz, Pforzheim, Rastatt, Rottweil, Saarlouis, Sollingen, Speyer, Wittlich, Woippy, Worms, Wurtemberg.

The above figures are exclusive of 335 raids made upon German aerodromes at Morhange, Frescaty, Boulay, Buhl, etc., and upon other military objectives in Alsace-Lorraine and Germany. In all over 660 tons of bombs were dropped.

The number of raids made by the British alone over Germany in 12 months is nearly five times as great as the total number of air raids made by Germany over Great Britain during rather more than four years of war.

THE ROLL OF HONOUR

(When an Officer is seconded from the Army, his unit is shown in brackets.)

Published December 4th

Killed

Annis, Lieut. W. F.
Bourne, Lieut. A. E.

Coe, Sec. Lieut. D. E.

Previously Missing, now reported Killed

Clarke, Lieut. H. W.
McCaig, Lieut. P.

Nash, Capt. T. W.
Newby, Lieut. W.

Died of Wounds

Aldrich, Sec. Lieut. L. E.
Crawford, Sec. Lieut. J. C.

Fawcett, Sec. Lieut. F.

Died

Evans, Lieut. E. L.

Previously Missing, believed Wounded and Prisoner, now reported Prisoner

Pym, Lieut. F. G.

Previously Missing, believed Prisoners, now reported Prisoners

Dunlop, Sec. Lieut. J. M.
Harley, Lieut. V.
Ingram, Capt. R. S. S.
Jackson, Lieut. W. E.

Luard, Sec. Lieut. R. B.
McPhee, Lieut. R.
Porter, Sec. Lieut. A. C.
Stringer, Sec. Lieut. J. S.

Previously Missing, now reported Prisoners

Ambler, Lieut. J. J.
Bartlett, Sec. Lieut. G. R.
Dandy, Sec. Lieut. J. M.
Fellows, Lieut. H. V.

Jackson, Sec. Lieut. W. R.
Kebble, Sec. Lieut. F. J.
MacFarlane, Lieut. W. K.
Yelverton, Sec. Lieut. C. N.

Repatriated

Broder, Capt. P. A.
Brown, Sec. Lieut. C. H.
Castle, Sec. Lieut. W. F. L.
Clements-Finnerty, Lieut. H.
Collier, Sec. Lieut. A. C.
Davis, Capt. D. W.
Geen, Lieut. C.
Griffin, Lieut. R. T.
Griffiths, Lieut. C. D.
Halford, Lieut. E. A.
Harvey, Lieut. E. B.
Hoblyn, Hon. Capt. S. E.
Inge, Lieut. R. M.

Leech, Capt. J. C.
Lerwill, Lieut. O.
Lindop, Capt. V. S. E.
Mayne, Capt. H. G. L.
McEwan, Lieut. J. G.
Nichol, Capt. R. W.
Odling, Lieut. V. G.
Pearson, Lieut. L. J.
Robertson, Lieut. J. G.
Russell, Lieut. A. L.
Thamer, Sec. Lieut. O.
Tudor-Hart, Lieut. W. O. T.
Van Nostrand, Lieut. C. I.

Published December 5th

Killed

Graham, Sec. Lieut. G. W.
Colville-Jones, Capt. R.
Milner, Lieut. E.

Scobie, Lieut. K. McD.
Waddington, Sec. Lieut. J. H.

Previously Missing, now reported Killed

Smith, Sec. Lieut. L. G.
Tupman, Sec. Lieut. A. L.

Warner, Lieut. J. W.

Died of Wounds

McLeod, Lieut. A. A., V.C.
Wreathall, Sec. Lieut. R. S.

Young, P.F.O. C. E.

Previously Missing, now reported Wounded and Prisoners

Bennett, Lieut. R. C., D.F.C.
Chase, Sec. Lieut. D. E.

MacKay, Capt. E. A., M.C., D.F.C.
Mitchell, Sec. Lieut. W.

Previously Missing, now reported Prisoners

Elwig, Sec. Lieut. H. J. C.
Eveleigh, Sec. Lieut. E. R.
Forman, Capt. J. H.
Heaver, Sec. Lieut. A. R.
Henry, Lieut. R. A.

Hitchcock, Sec. Lieut. C. G.
Mahoney, Lieut. M. F. J. R.
Roberts, Lieut. H. J. W.
Schorn, Sec. Lieut. F. F.
Thompson, Lieut. C. W. M.

Published December 6th

Killed

Buckingham, Sec. Lieut. P. E.
Caple, Lieut. L. N.
Cooper, Lieut. W. J.
Hughes, Lieut. W.
Hunt, Sec. Lieut. H. H.
Logan, Lieut. T. E.
McElhinney, Sec. Lieut. A. M.
Manders, Sec. Lieut. A.

Norman, Lieut. A. G. B.
Proctor, Sec. Lieut. L. A. H.
Rushton, Sec. Lieut. W.
Salton, Sec. Lieut. W. K.
Symondson, Capt., V. F.
Taylor, Sec. Lieut. J. H.
Wilkinson, Sec. Lieut. E. F.
Williamson, Sec. Lieut. R. B.

Previously Missing, now reported Killed

Baker, Sec. Lieut. T. M.

Smith, Sec. Lieut. H. S.

Previously reported Wounded, now reported Killed

Hodgson, Capt. F. H.
Crummey, Capt. F. C.
Paull, Lieut. C. W. T.

Died

Speake, Sec. Lieut. T. G.

Previously Missing, believed Wounded and Prisoners, now reported Wounded and Prisoners

Anslow, Sec. Lieut. F. F.
Brown, Sec. Lieut. J. W.

Pearson, Sec. Lieut. B. C.
Reveley, Lieut. P. T. A.

Previously Missing, now reported Wounded and Prisoners

Thorpe, Sec. Lieut. C. E.
Valentine, Lieut. J.

Walker, Sec. Lieut. J. C.
Wilcox, Sec. Lieut. C. H.

Previously Missing, believed Prisoner, now reported Prisoner

Conover, Lieut. C. C.

Previously Missing, now reported Prisoners

Cawley, Sec. Lieut. C. F.
Harrison, Sec. Lieut. A. G.
Raymond, Sec. Lieut. L. B.

Sorley, Sec. Lieut. J. T.
Thomson, Sec. Lieut. D. A.
Wilson, Sec. Lieut. W. A.

Repatriated

Abey, Sec. Lieut. H. R.
Agnew, Lieut. A. B.
Carey, Lieut. J. G.
Coates, Sec. Lieut. S.
Cowley, Capt. A. T.
d'Arcy, Levy, Lieut. J. M.
Dee, Sec. Lieut. D. M.
Fox, Lieut. D. S.
Gilchrist, Lieut. W. W.
Gompertz, Sec. Lieut. H. C. T.
Goodson, Lieut. E. J.
Greenwood, Lieut. P. G.
Gwyer, Lieut. N. E.
Hall, Lieut. E. W. O.

Hamlet, Sec. Lieut. H. A.
Harcourt-Vernon, Capt. A. A.
Harrison, Lieut. W. L.
Henry, Sec. Lieut. S. S.
Hughes, Sec. Lieut. G. E.
Hunt, Capt. R. E. B.
Jerrard, Lieut. A., V.C.
McDonald, Lieut. D. C.
Morgan, Sec. Lieut. T. P.
Schofield, Lieut. E. R. C.
Smith, Sec. Lieut. M.
Strang, Lieut. A. R.
Whitehouse, Sec. Lieut. S. L.

Published December 7th

Killed

Allen, Sec. Lieut. R. F.
Baird, Lieut. W. D. H.
Evans, Lieut. P. L.
Garside, Sec. Lieut. J.
Halfpenny, Lieut. W. H.
Horridge, Capt. J. L.

Jassby, Sec. Lieut. H. W.
Little, Sec. Lieut. R. K.
Mackay, Lieut. M. W. H.
Russell, Capt. H. T. F., M.C.
Wodehouse, Lieut. C. E.

Wounded

Blake, Lieut. R. A.

Todd, Sec. Lieut. J. D.

Missing

Woolley, Sec. Lieut. F. W.

Previously Missing, now reported Wounded and Prisoner

Cornwell, Sec. Lieut. F.

Previously Missing, now reported Prisoners

Dunn, Sec. Lieut. M. W.
Phillips, Sec. Lieut. P. L.

Thornton, Sec. Lieut. W. R.

McCrea, Sec. Lieut. P. C. S.

Prisoners of War

Timmins, Sec. Lieut. L.

Repatriated

Amm, Lieut. E. O.
Beare, Capt. S. G.
Berry, Sec. Lieut. H. J.
Calrow, Lieut. R.
Cobham, Lieut. R. L.
Forder, Lieut. E. G.
Frazier, Capt. R. W.
Gallagher, Lieut. E. G.

Gaynor, Lieut. H. F.
Hart-Davies, Sec. Lieut. H. R.
MacDonald, Sec. Lieut. R.
O'Dwyer, Capt. J. E. A.
Petter, Capt. R. C.
Robins, Lieut. S. M.
Stopner, Lieut. A. C.
Taylor, Lieut. E. E.

Published December 9th

Died of Injuries

Booth, Sec. Lieut. L. H.

Kirton, Lieut. R. J.

Died

Bradburn, Lieut. F. J.
Brutey, Capt. H. R.
Cartwright, Capt. A. W. C.
Child, Sec. Lieut. M. H.
Coltson, Capt. C. S., D.F.C.
Creese, Lieut. A. R.
Edwards, Lieut. B. W.

Harding, Sec. Lieut. C. G.
Haynes, Sec. Lieut. E. B.
Humble-Crofts, Capt. A. M.
Kidd, Sec. Lieut. J. A.
Morrison, Lieut. E. A.
Poole, Lieut. H.
Rigby, Lieut. J.

Wounded

Shearer, Maj. A. B.

Missing

Proffitt, Sec. Lieut. J. T. R.

Repatriated

Cawley, Sec. Lieut. C. F.
Davidson, Sec. Lieut. L. K.
Dobell, Lieut.-Comdr. H.
Dolling-Smith, Lieut. C. H.
Fellows, Lieut.-Col. P. F. M.
Hilton, Sec. Lieut. T. R.

Hunt, Capt. P. B. G.
McNamara, Sec. Lieut. J. F.
Montgomery, Capt. K. B.
Newey, Sec. Lieut. T.
Purvis, Lieut. W. F.

Back from Turkey

THE following officers, who were prisoners in Turkey, have been released:—

Lieut. N. G. Begg, M.C., Rif. Brig., attd. R.F.C.
Lieut. J. W. Blake, K.R.R.C., attd. R.F.C.
Lieut. H. L. W. Hancock, R.F.A., attd. R.F.C.
Sec. Lieut. J. D. G. MacRae, Sea. Hrs., attd. R.F.C.
Lieut. A. S. Mills, Yeo., attd. R.F.C.
Lieut. E. A. Newton, Imperial Camel Corps, attd. R.N.A.S.
Lieut. L. H. Pakenham-Walsh, Ches. R., attd. R.F.C.
Sec. Lieut. F. M. Pryce, S. Wales Bor., attd. R.F.C.
Lieut. W. Taylor, E. Lancs. R., attd. R.F.C.
Capt. C. L. Woolley, R.F.A., attd. R.F.C.

Back from Germany

THE following officers, who were prisoners in Germany, have been released, and have arrived in England:—

Lieut. D. L. Houghton, Midsx. R., attd. R.F.C.
Lieut. V. O. Lonsdale, R.F.A., attd. R.F.C.

Sec. Lieut. T. P. Morgan, R.F.C.
Lieut. C. W. Rhodes (Aus. F.C.).
Capt. W. H. Sugden-Wilson, Yeo., attd. R.F.C.
Sec. Lieut. S. L. Whitehouse, R.F.C.

Aerial Escort for Allied Delegates

WHEN the French and Italian delegates, M. Clemenceau, Marshal Foch, Signor Orlando and Baron Sonnino, who had been attending the conference on peace preliminaries in Downing Street, left London on December 4th, the special train was escorted by a formation of British aeroplanes from the Metropolis to Dover, and another formation conveyed the destroyer to France.

The R.A.F. and Medical Research

MAJOR SYDNEY R. SCOTT, M.S., F.R.C.S., having completed the investigations on the ear and aviation which he undertook at the request of the Army authorities in France, has relinquished his temporary commission in the R.A.M.C. and has returned to his duties at St. Bartholomew's and the National Hospitals.

STRESS OPTICAL EXPERIMENTS

By MAJOR A. R. LOW, R.A.F.

(Continued from page 1381.)

SECTION NO. 3 Examples of Optical Observations

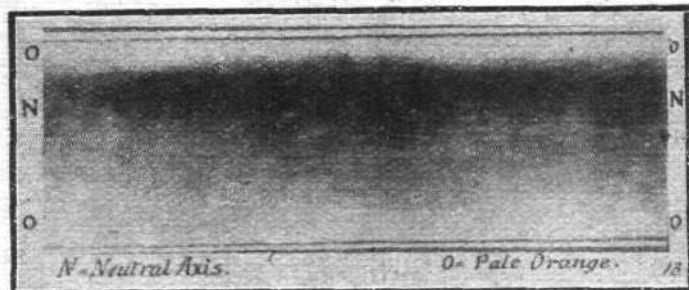


Fig. 13 shows the appearance of the image thrown on the screen when no external stress is applied. The pale orange colouring indicates a slight amount of stress which is either residual or is due to the weight of the girder itself. The two bright edges separated by dark stress bands from the main portion of the surface are caused by a surface effect in the xylonite itself, some physical change taking place in the worked edges of the material. Generally speaking, the dark band represents the neutral axis slightly shifted upwards by the end pressure.

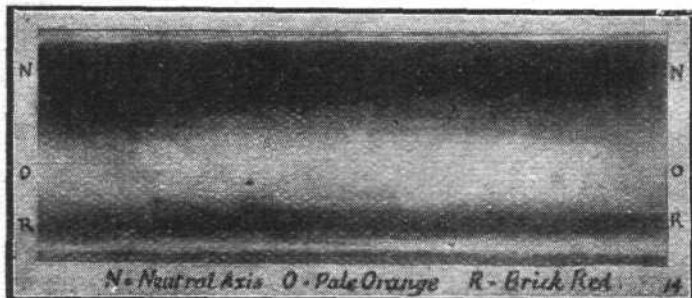


Fig. 14 shows the optical effect caused by a total load of 20 lbs. distributed as before. The neutral axis is shifted up in pretty much the same way as in Fig. 13, and the first order of colours partially appears as a broad band of pale orange in the lower edge, followed by a band of brick red.

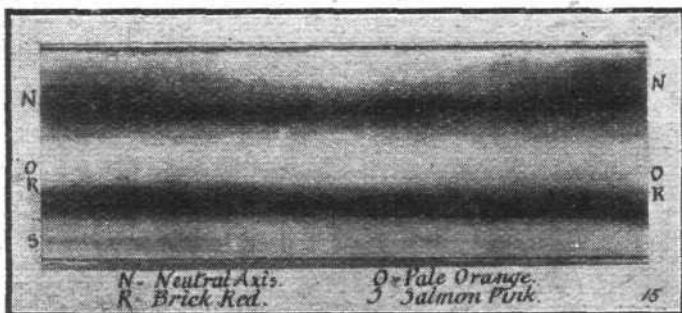


Fig. 15 shows the effect of a 30 lbs. load distributed as before. The neutral axis remains approximately in the same position as the two preceding photographs, and appears as a broad black band. Below, the first order of

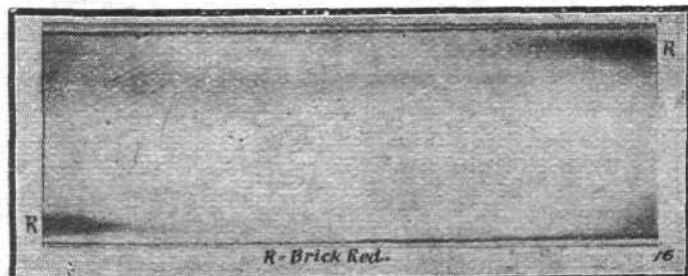


FIG. 16.

colours is completely shown, and the second order of colours also appears, showing a characteristic salmon pink as distinct from the brick red in the first order.

Fig. 16 shows the point of inflection with the 30-lb. distributed load. The point of inflection is symmetrically placed between the brick red wedges in the top right and bottom left corners.

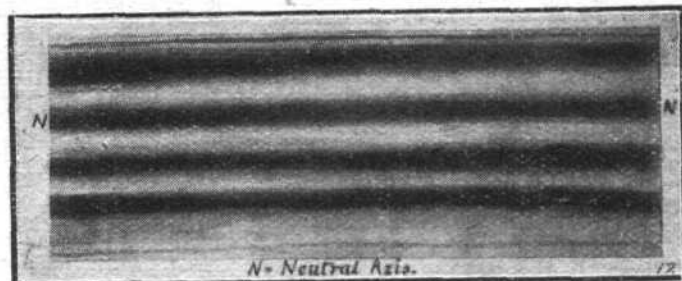


Fig. 17 shows the optical effect of 40 lb. load distributed as before. The neutral axis retains the same position approximately, but the dark grey band which indicates it is much narrower than before. Three orders of colours appear below the neutral axis, while above the neutral axis the completed first order appears and most of the second order.

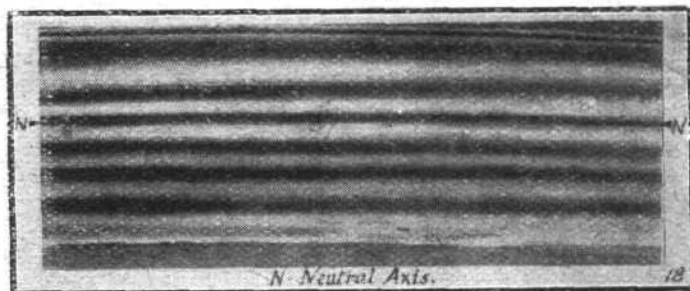


Fig. 18 shows the optical effect under the same load after one hour. Marked creeping has taken place, and

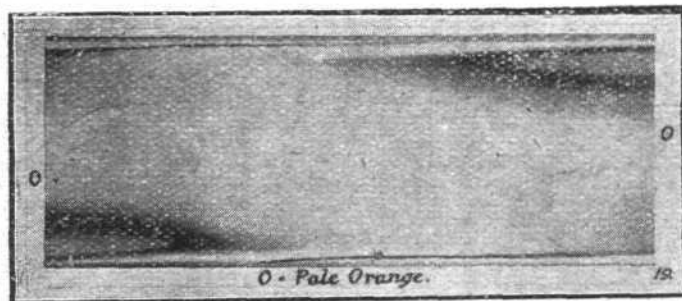


FIG. 19.

a complete new order of colours has appeared below the neutral axis, namely, the fourth, and likewise above the

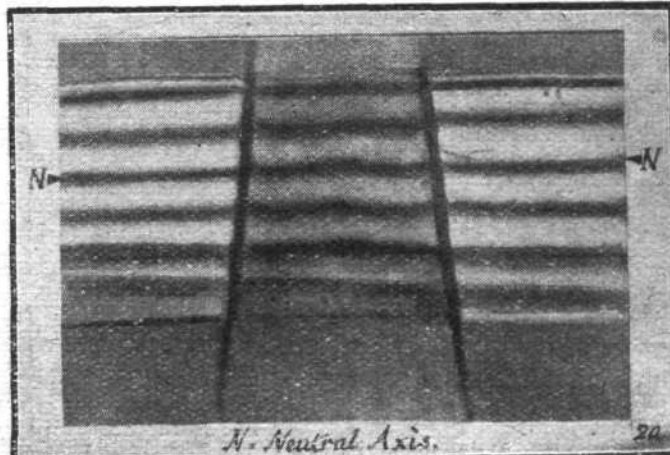


FIG. 20.

neutral axis, namely, the third. Throughout this series it will be noted that the edge effect modifies the colour progression for a narrow strip at each edge.

Fig. 19 shows the point of inflection with 40 lb. load as before, by taking the mean position between the wedge of colour at top right and bottom left corners. The pale orange colour over the greater part of the surface indicates nearly uniform compressional stress caused by the end thrust.

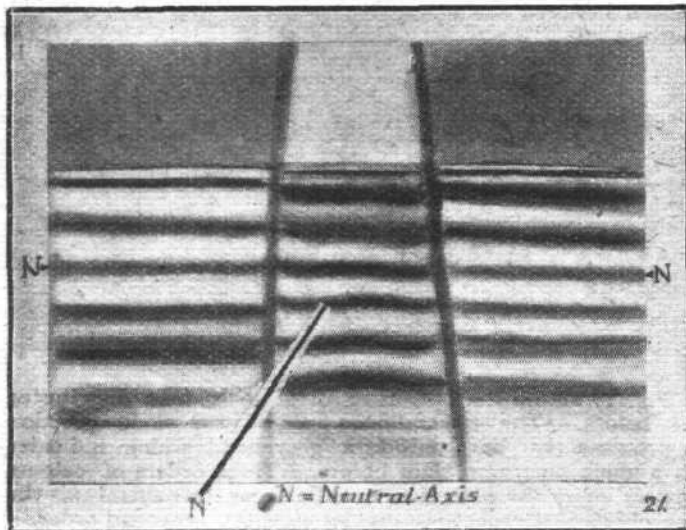


FIG. 21.

If there had been no end thrust, the colour would have been a uniform dark grey tint, as seen in the neutral axis in Fig. 13. Figs. 20, 21 and 22 illustrate the use of a tapered test piece under known stresses. The test piece is described in Section I.

Fig. 20 shows the test piece under no tension crossing

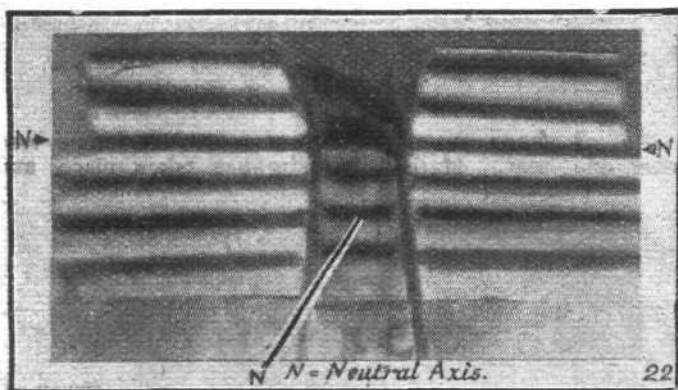


FIG. 22.

British Flax for Aeroplane Fabric

In the report of the Development Commissioners for the year ending March 31st, 1918, it is pointed out that owing to war needs has led to such an increase of flax-growing that it is no longer of an experimental or educational nature. In the previous years the Commissioners granted £6,275 to the British Flax and Hemp Growers' Society, and in 1917-18 a supplementary grant of £15,450 was made for an extension of the society's work in order to ensure a future supply of material for the production of aeroplane cloth and to increase the growth of linseed as feeding stuff for stock. This was followed by an application for an advance of £205,700, of which £200,000 was by way of a loan for the initiation of an extended programme for the cultivation of flax in Great Britain and its production into fibre. The growing of flax for fibre on the extended scale carries the undertaking outside the experimental or demonstrative sphere appropriate for aid from the Development Fund, and after the application referred to had been received arrangements were made for the whole of the society's flax-growing work to be taken over by the Board of Agriculture.

An Australian Aerial Survey

INFORMATION to hand from Melbourne is to the effect that Mr. Reginald Lloyd of London has formed a company to finance an aerial survey of a route between Australia and England, via Sydney and Port Said, and to locate landing

the strained beam. It will be noticed that the neutral axis has not been displaced apart from a certain distortion caused by the test piece not being in the same plane as the beam.

Fig. 21 shows the test piece so strained as to neutralise the first order of red, the result being that the neutral axis has apparently shifted down the breadth of one colour band.

Fig. 22 shows the test piece adjusted so that the second order of red is neutralised, the result being that the neutral axis has apparently shifted down the breadth of two colour bands. In both cases the stress at the neutralised band of the test piece is equal to the stress in the model spar.

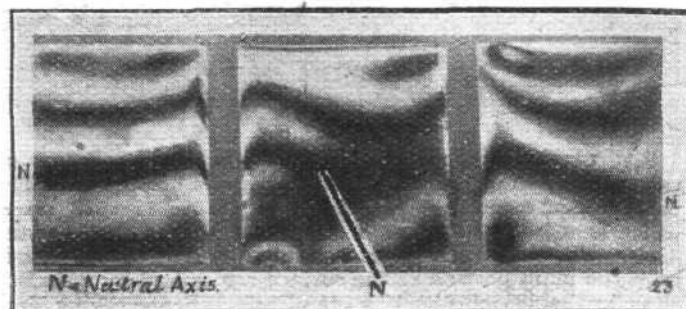


Fig. 23 shows the isoclinic lines and the isochromatic lines in the neighbourhood of two bolts piercing the beam and screwed up with moderate tightness.

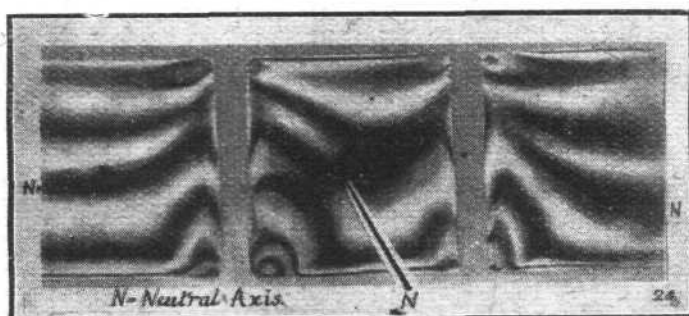


Fig. 24 shows the result of overstraining the bolts (the loads in both cases being 40 lbs. distributed). The dark lines are no longer neutral axes, but a method can be worked out for evaluating the stresses in these two cases. For the present it is sufficient to remark that the condition of uniform stress gradient in the main portion of the beam is completely altered in the neighbourhood of the bolts, but is very nearly restored at a distance equal to the depth of the beam.

(To be continued.)

and relay stations. Although the movement is chiefly on a business basis, General Legge, Chief of Staff, is supporting the scheme on the ground that it may provide the nucleus of the future aerial militia.

Map of the U.S.A.

ADVANTAGE is being taken by the U.S. authorities of the training of U.S. aviators in photographic work to secure a photographic map of certain sections of the country. The first map to be completed is that of the territory in and around Fort Sill, Oklahoma. It is made up of a mosaic of 4,000 separate prints, the map covering a space 16 ft. long and 6 ft. wide, reproducing a ground area of 310 sq. miles. This map shows highways, lanes, trees, fences, railway-lines and other landmarks. This work was completed in a little over a month, and three machines went up each day to secure the negatives. Each machine exposed 72 during a trip averaging an hour-and-a-half.

No Show in New York?

JUST before the Armistice was signed, the American Manufacturers' Aircraft Association decided to abandon their arrangements for the holding of the annual show during the coming year, in view of the necessity for devoting all their time and energy to Government requirements. The altered situation may, however, cause this decision to be modified.

AIRISMS FROM THE FOUR WINDS

THAT arch-brute the Bavarian ex-Crown Prince Rupprecht appears to be in chastened mind just now, after the collapse of the Hun machinations. What saints these one-time bloodthirsty villains have suddenly become. Apparently Ludendorff, or Hindenburg, or any other old thing is the real villain of the piece—not peace—and these Hunnish royalties were from the first out all the time advocating gentle persuasion rather than the mailed fist. In fact by most of their present utterances they seem as if they were trying to qualify for super-Conchies. According to some "revelations" in the *Bayerischer Kurier* this is the latest version of a bit of holy work by the gentle Rupprecht:

"During the last days of the war Rupprecht learned that a striking invention had been made by a German engineer. A new type of bomb had been made, and the plan was that German airmen should drop several thousands of these on Paris, and that a quarter of the French capital should be set on fire and destroyed. Rupprecht at once protested vigorously to the Chancellor, with the result that von Hintze went to Ludendorff and prevented the use of the new type of bomb."

We don't think!

AN "Air Survey" is a suggestion emanating from Mr. A. Mackenzie, of Moor-Allerton Lodge, Leeds. Mr. Mackenzie, writing, puts his suggestion as follows:—

"Now that the Royal Air Force have comparatively little to do, would it not be possible to utilise their services until demobilisation in surveying the country by means of aerial photographs? Mosaics of these were of the greatest value in France for the purpose of siting the objects of military

importance, such as earthworks, to the best advantage, and they would be undoubtedly of equal value to architects, surveyors, estate agents, and others, in developing land and in simplifying labour and drainage problems. I can speak with confidence as to the value of aeroplane photographs in designing golf courses, which, although in itself of minor importance, is nevertheless an indication of its possibilities in other directions."

The idea is quite good, but evidently Mr. Mackenzie does not follow the cult of the club, or he would never have dared to suggest a golf-course being of "minor importance." Just ask any plus man what he thinks about it.

No wonder the Briton gets there every time:—

"Kindly reserve two stalls—front row centre if possible—for the evening performance on Monday, 17th, 1919. I should be much obliged if you could arrange this, although somewhat in advance. Circumstances prevent my obtaining seats under normal circumstances at the moment.—Faithfully, W. E. L. Courtney, Lt."

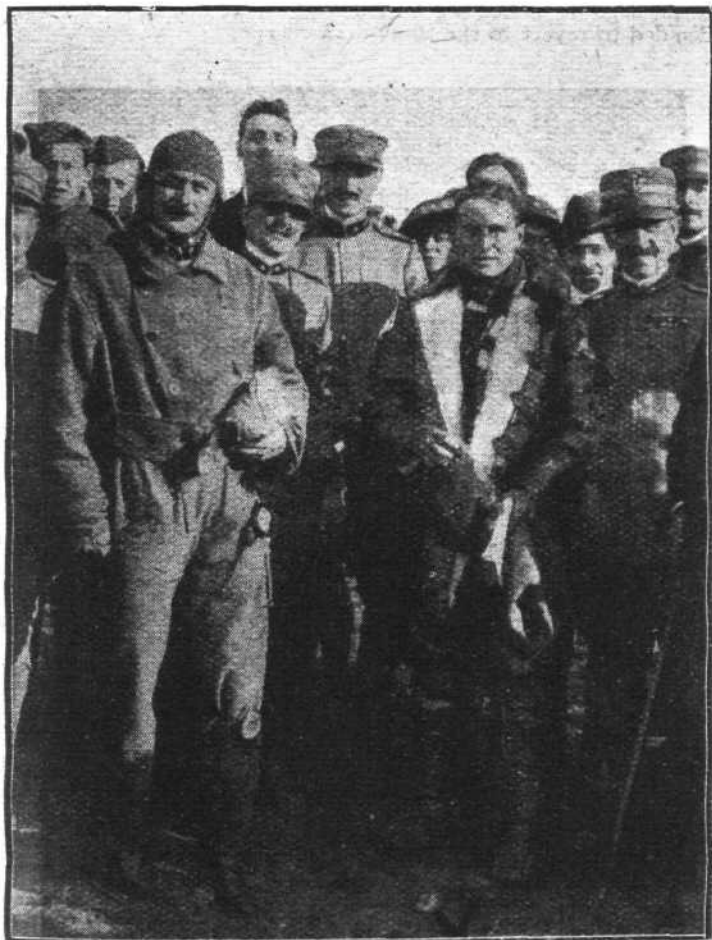
This was the matter-of-fact postcard received on December 3rd from an R.A.F. officer by the Alhambra management, London, dated October 31st, from the English prisoners' lager for officers at Koln, Deutschland, and visé "Limburg, 58," by the German authorities.

Why should the Anarchial Extremist have a fictitious halo around him by the adoption of the puzzling appellation of "Bolshevist." The latter just means and stands for "Extremist," and let this for the future be the plain title by which these anarchist gentry are known. The term Bolshevist suggests some mysterious mission, which these assassins do not possess—beyond barefaced robbery, unrestricted murder and annexation of everything portable or otherwise. No living person, whether he or she class themselves under labour or anything else, who has so much as one single item of worldly possession or a one pound war bond to his or her name can afford to be an Extremist, for it means parting with their worldly possession, small or large, to the first of these cut throat "Extremist" assassins who happens their way. That's all there is in the "Extremists'" (alias "Bolsheviks") single commandment—plunder and murder.

If our people want a picture of what Bolshevism stands for, study what M. Oudendyk, Dutch Minister in Petrograd, has to say upon the subject, after personal experience of its atrocities. Read:—

"I wish to give a solemn warning to the working classes of all nations against the high-falutin' notions which I have seen in Russia, and which have brought such disastrous results already to that country. Bolshevism, I say without exaggeration, is the end of civilisation. I have known Russia intimately for 20 years, under the old régime and under the new conditions. Never have the working classes of Russia suffered as they are doing at the present moment, notwithstanding all that the present so-called ruling classes in that country choose to tell the world. Factories are at a standstill and are being ruined, and without the aid of foreign capital they can never be resuscitated. I have never seen nor dreamt of the possibility of such corruption, tyranny, and the absence of all semblance of freedom, as there is in Russia at the present moment. Translated into practice the five points of Bolshevism really come to this: (1) High wages; (2) don't work; (3) take other people's property; (4) no punishment; (5) no taxation. And I suppose there will always be a certain number of people who will adopt a programme which in practice amounts to this. That is why, having seen myself the disastrous effects of this policy on all classes of society, I take the first opportunity on my arrival in England to warn the public.

The bulk of the workmen in Russia are to-day far and away worse off than they ever have been, and the state of unemployment is simply terrible. When I left Petrograd the situation was one of utter starvation, and most people hardly knew how they would exist through the following day. The future to me seems hopeless. It certainly is impossible for me to forecast what may happen. One thing is certain—that left as she now is, Russia will be in a state of



M. Tonso, the mechanic, who acted as assistant to Capt. Laureati in his flight from Turin to London, has, we regret to learn, just died in Italy of influenza. Above is a photograph of M. Tonso, taken at the time of the memorable flight.

utter and complete ruin. Wherever Bolshevism rules the nation has been beaten to a pulp, and is utterly helpless. In such a situation the whole world must stand shoulder to shoulder, so that out of the ruins something may arise, though personally I know not what."

AIRWAY passports. Who was the first civilian to obtain a visé passport to travel to France by aeroplane? Mr. A. J. A. Wallace Barr, of Cellon Ltd., claims such a precious document dated September 21st, 1917. Next please.

A BOTTOMLEY point worthy of note:—

Mr. Horatio Bottomley, addressing a meeting in the Hackney Empire, said the Kaiser had been found guilty of wilful murder in this country by at least three coroners' juries, and, that being so, any one of the coroners concerned could issue a warrant for his arrest. Under the treaty laws this country had with Holland, the Government could call for the Kaiser's extradition upon the strength of any one of those verdicts.

Now that President Wilson will be in our midst within a few days, too much publicity cannot be given to the very plain-spoken message dispatched on December 6th to America by that Pastmaster of observant correspondents, Mr. Edward Price Bell of the *Chicago Daily News*. The Hun is, if possible, even more despicable in his venomous peaceful penetration tactics than in his diabolical war waging methods: Thus Mr. Price: "Information of the highest credibility direct from militarist circles in Berlin warrants the statement that the Huns are not without hope of winning the war yet."

"Preposterous though this hope may seem, it springs from well-considered plans and possibilities. These plans are propagandist and these possibilities are connected with the course of developments at the Peace Conference. Prussian Junkerdom is endeavouring with renewed energy, not only to divide the Allies and America, but to involve them in war with each other. Every pro-Hun influence that once operated openly or covertly in America has taken the field again. Every mouth that uttered sentiments and alleged facts calculated to promote Hun interests is once more vocal."

"All the underground mechanism of Hun propaganda is running. Hun agents, some conscious, many unconscious, are playing the Hun game. Not a few of these are in London now. Quite a company of them will be in Paris and Versailles during the Peace Conference. Their chief trump cards are two—first allegations designed to poison American opinion against Britain; second, representations of American policy touching the sea calculated to make Britons believe that America is their enemy. Prussians of the old régime rejoice in the relaxation of vigilance among the Allies and the United States. They view with ecstasy the cessation of organised effort to maintain the unity of the Allied-American front. Moderated editorial opinion against them in the United States is welcomed by them with joy as tending to smooth the way for their great final struggle to snatch victory from disaster. They believe that there is one thing, and one thing only, that can save them—namely, the disruption of the Coalition that encompassed their defeat. Large military forces and quantities of munitions are still in the hands of those who would fight again, if at all possible. These persons are convinced that if the Allies and America, particularly Britain and America, could be embroiled in a serious quarrel there would be splendid promise of a military revival of Germany. Any such quarrel would be the signal for a grand push in the Fatherland to bring back the Kaiser, rehabilitate the Army, reassert absolutely the ascendancy of the Hohenzollern criminals. Internally nothing cohesive or powerful stands in their way. Little else than social chaos and military impotence would require sweeping away. It is far from wise to pooh-pooh this danger."

"President Wilson's alleged aggressive intentions in the direction of reducing naval armaments—intentions probably entirely remote from his mind—have produced widespread uneasiness in Britain and filled many minds with indignation. Indignant people are never reasonable. Britain holds to her Navy as she holds to her life. Any purpose on the part of anyone to cripple her sea arm would be regarded by her in the light of deadly hostility. Such a purpose emanating from America, in view of what British maritime power has meant for freedom in this war, would be resented with peculiar amazement and exasperation. President Wilson's real aims should be proclaimed without delay. Cheap-jack correspondents are speaking for him. I am sure they grotesquely misrepresent his motives, but their assertions are published in Europe, and are like matches in a powder factory. They excite glad emotions only in Hunland. They play the Hun game more effectively than it has ever been played before. If President Wilson insists on maintaining what is interpreted as sinister silence on this subject the American people

should find some way quickly to make its opinion known in an unmistakable manner."

VERY recently we gave a short obituary of Capt. Pinsard, who was reported by an Exchange telegram to have died of influenza after escaping a thousand windy hazards in the air, where he was one of the foremost aces. We now learn from a paragraph in a French paper "Un Mort qui se porte bien!" that the gallant Captain finds himself in the Gallic equivalent of "the pink." And none more happy than we to hear it, there is one of Life's Little Ironies the less.

TEN YEARS AGO

Excerpts from "FLIGHT" of November 1908.

THE PELTERIE MONOPLANE WINS 200 METRE PRIZE.

THE Esnault-Pelterie monoplane has succeeded in gaining one of the 200 metre prizes of the Aero Club of France by making the necessary flight in the presence of the Committee on November 21st. M. Chateau, engineer of the factory, was at the wheel, and the distance accomplished was 316 metres.

FARMAN FLIES BY NIGHT.

ON Saturday of last week an imposing deputation of members of the Ligue Nationale Aérienne, Government officials, and distinguished guests travelled to Chalons in order to witness an exhibition by Mr. Farman. The wind unfortunately was so high that it was impossible to do anything before dark, but, nothing daunted by the circumstances, Mr. Farman brought out his machine, mounted it, and flew away into the night. Presently from above the trees, the head-lights on his aeroplane shone forth again, and so he came and went in the presence of a great crowd of spectators.

FARMAN'S NEW TRI-PLANE

At Chalons-sur-Marne, Henry Farman has been carrying out some interesting experiments with his new tri-plane. After an exciting test on the 24th ult., when a remarkably strong wind was blowing, he proceeded to reduce the area of the supporting surfaces by removing one of them, and thus converting his triple-decker into a double-decker. With this machine he carried out experiments on the 28th ult., but although expressing the opinion that it was, in the new form, capable of beating all his records, he has nevertheless decided to revert to the three-decker type.



Captain Wright Burrows, R.A.F., another aviation candidate for Parliament. Captain Wright Burrows, who holds an administrative position in the Air Board, is standing as Liberal candidate for North Hackney.

THE REPORT OF THE CIVIL AERIAL TRANSPORT COMMITTEE

THE very voluminous report of the C.A.T. Committee, taken as a whole, is highly important in the variety of the aviation subjects upon which it touches. It is, however, greatly marred by the great number of omissions, as an official note explains "owing to the fact that much of the information upon which the reports both of the Committee and of its Special Committees were based was confidential or secret, it has been found impossible to present the reports to the public in their original and complete form. Excisions of passages in the reports or of appendices are indicated by asterisks and footnotes." Of the former, unfortunately, there are a distressingly large number, and having regard to the latest date of any of the reports being about May last, and that the Armistice was signed on November 11th, it does appear somewhat ridiculous that so much information, at this very vital stage of aviation, should have been suppressed. Possibly a "supplement" presently may make up for this deficiency, but in the meantime we can only deplore that it was not found possible to dispense with most of those irritating asterisks, by, if necessary, the inclusion at the end of the present White Paper, of the "supplement" which we venture to hope will be later issued.

We hope to publish in sections most of the Committee's reports, the complete series forming a very wide field for serious thought upon the many main and side issues governing the future of aviation. The following is the first instalment of the report, and an idea of the ground covered by the Committee's investigations may be gauged from the following summary of the main subjects dealt with in detail:—

APPENDIX I.: Report of Special Committee No. 1 on Law and Policy. Part I. International Law. Part II. Municipal Control and Legislation. Appendices: Draft International Convention, 1910; Aerial Navigation Bill, 1911; Recommendations as to drafting amendments to the Aerial Navigation Bill.

APPENDIX II.: Interim Report of Special Committee

Introduction.

1. The terms of reference under which we, the Civil Aerial Transport Committee, were appointed are as follows:—

To consider and report to the Air Board with regard to:—

(1) The steps which should be taken with a view to the development and regulation after the War of aviation for civil and commercial purposes from a domestic, and imperial, and an international standpoint.

(2) The extent to which it will be possible to utilise for the above purpose the trained personnel and the aircraft which the conclusion of peace may leave surplus to the requirements of the Naval and Military Air Services of the United Kingdom and Overseas Dominions.

2. As the subjects covered by these terms of reference were of such a wide character and required so much detailed investigation, we thought it advisable to divide them into five headings, which were referred to five Special Committees. These headings were broadly as follows:—

(1) Questions of law and policy.

(2) Technical and practical questions as to the possibilities of performance of aircraft and as to the requirements of aerial services.

(3) Business questions relating to the position of the aircraft manufacturing industry after the war, the probabilities of the establishment of aerial transport services and the steps which would be necessary for the maintenance of this industry and for the development of these services.

(4) Questions of labour arising in the aircraft manufacturing industry and in aerial transport services.

(5) Problems of scientific research and the special education of expert designers, engineers, and pilots.

The successive chapters of this Report follow the above headings.

3. These five Special Committees have all presented reports to us, and these reports have been carefully considered. They contain the results of much labour and careful enquiry, and though our general conclusions in the present report may not always be wholly in agreement with those expressed in the Special Committee's reports, we have attached them as Appendices to this Report, in the belief that they will be of great assistance to the Air Council in the study of the various problems connected with civil aerial transport.

4. In view of the fact that our Interim Report on International Questions dealt with the first part of the report of Special Committee No. 1, it would seem the most convenient course to commence the present report by setting out our conclusions on the problems of municipal control and legislation treated of in the second part of that Special Committee's Report. Many of the regulations which will govern aerial transport will be applicable to foreign aircraft as well as to our own, and regulations of this character should, in the event of some International Convention being arranged, be in accord with the terms of such Convention.

CHAPTER I.

Municipal Control and Legislation

1. The necessity for some legislation as to aerial transport is sufficiently indicated in the report of Special Committee No. 1. We adopt the view of that Special Committee in approving the general lines upon which the Aerial Navigation Bill (see Appendix B to their Report) is drawn. Before proceeding to a detailed consideration of its clauses we offer the following general observations.

2. We think that the claim to full and absolute sovereignty should be emphasised in the preamble to the Bill for the reasons already suggested in our Interim Report.

3. The Bill itself is drawn in such a manner as to leave to Government Departments power to issue regulations and to clothe them with a considerable discretion as to the scope of these regulations. The Bill as drawn

No. 2 on technical and practical questions of aerial transport. Appendices: Report by Brig.-Gen. Maitland as to the effect in a thousand-mile journey of an adverse wind in the case of rigid airships; Report by Mr. Harper on an experimental air mail service; Flying rules of the Royal Aero Club; Report on weather service by Brig.-Gen. Lord Montagu and Major Taylor; Report on wireless communication by Col. O'Gorman and Major Vincent Smith; Report by Brig.-Gen. Maitland and Col. O'Gorman on safety appliances; Report by Col. O'Gorman, Mr. Holt Thomas, and Mr. Lanchester as to a main or terminal aerodrome; Report by Major Robb on intermediate landing grounds.

APPENDIX III.: Final Report of Special Committee No. 2. Appendices: The Airship for Commercial Purposes, by Brig.-Gen. Maitland; Correspondence respecting fog on the coast of Newfoundland; Revised memorandum by Mr. Harper on an experimental air mail service.

APPENDIX IV.: Report of Special Committee No. 3 on business questions relating to the aircraft industry and aerial services.

APPENDIX V.: Supplementary Report of Special Committee No. 3. Summary of Reports of Special Committee No. 3.

APPENDIX VI.: Report of Special Committee No. 4 on Labour. Minority Report by the Chairman, Mr. H. G. Wells.

APPENDIX VII.: Interim and Final Reports of Special Committee No. 5 on Research and Expert Education. Part I: Research; Part II: Education. Appendices: Report by Sir R. T. Glazebrook and Professor Petavel on the preparation of an Aeronautical Treatise; Memorandum by Lieut.-Col. Lyons on Research in regard to Meteorology; Letter from Sir Napier Shaw to the Secretary as to meteorological services in aid of aerial transport; Memorandum by Capt. Hucks and Mr. Harper as to accidents and accident investigation.

The following is the text of the final report:—

has taken the Merchant Shipping Acts as the model for many of its clauses, e.g., as to registration, certificates of airworthiness, and collision regulations. For this reason it is proposed in the Bill that the Home Office should be responsible for general regulations as to flying and for matters in which the police are concerned, and the Board of Trade for administrative regulations of the kind indicated above.

4. The Special Committee have expressed a definite opinion that all the powers and duties of regulating aerial transport should be assigned to the Air Ministry. This proposal offers certain advantages in grouping in one Department officials and experts responsible for the issue and administration of regulations, which in the present case must to a great extent be governed by naval and military considerations. As an illustration, it is only necessary to refer to the close connection between prescribed landing places for foreign aircraft and prohibited areas. As against the proposal the analogy of railways and shipping seems logically to point to the desirability of assigning aerial transport to the Government Department primarily concerned with trade and commerce, i.e., to the Board of Trade. If the former view, which we consider the preferable one, be adopted, some legislation in extension of the Air Force (Constitution) Act, 1917, would seem to be necessary to enable the Air Ministry to create the organisation required to deal with civil as distinct from military flying.

5. The Clauses of the Aerial Navigation Bill itself have been closely examined by Special Committee No. 1. We do not propose to deal with them *seriatim*, and think it better to state that, generally speaking, subject to two modifications noted below we approve of the detailed conclusions arrived at by the Special Committee.

6. Of the general regulations contemplated in Clause 1, those which will prescribe prohibited zones and landing areas for foreign aircraft are probably the most important. We have already referred (in our Interim Report) to the desirability of liberal treatment in the admission of foreign aircraft to this country.

7. The Bill adopts as the criterion of British nationality in the case of aircraft the nationality of the owner. (See Clause 2.) Probably the most difficult problems as to nationality will arise in relation to ownership by companies, and we desire to draw particular attention to the recommendations of Special Committee No. 1 as to the conditions on which aircraft owned by companies should be deemed to be British aircraft. The provisions as to registration do not call for comment.

8. We note with approval the recommendations of Special Committee No. 1 as to limiting the necessity for certificates of airworthiness (see Clause 4 of the Bill). The clause as originally drawn would involve the possibility of individual aircraft being subjected to stringent tests and examinations, which in our view would be unnecessary, and which, to be of any use, would require to be repeated at very frequent intervals. The question is one of considerable importance, since the recognition of foreign certificates in the case of international flying is a matter which must be dealt with in any International Convention.

9. As to certificates of competency for navigators (see Clause 5), we find ourselves not in entire agreement with Special Committee No. 1, who in their Report approved Clause 5 of the Bill as originally drawn. We think that, while it should be obligatory on all navigators in charge of aircraft carrying goods or passengers to possess certificates of competency, and while the appropriate Government Department should have power to require certification of navigators in all cases, it should be left to such department to decide whether or not certification of navigators of, e.g., private aircraft should be enforced by regulation. It seems to us that the safety of the public will probably be sufficiently ensured by the interest of the private navigator in acquiring sufficient skill to ensure his own safety. Since certificates of competency will be required on all occasions when aircraft of any

kind are used in flying over foreign territory, the number of private navigators not taking out certificates will probably be small, in the event of no regulations being issued applicable to them. The absence of obligatory certificates, in the first instance, in the case of the private navigator, seems to us to be reasonable in the interests of the early development of civil flying.

10. The collision and signals of distress regulations, to the provision of which Clauses 6 and 9 of the Bill are directed, have already been referred to in paragraph 10 of our Interim Report. We have approved the view there expressed that the collision rules of the Royal Aero Club should be taken as a basis for the collision regulations. Signals of distress regulations are at present the subject of expert enquiry. In view of the fact that regulations of both these kinds must be discussed primarily from the international point of view, we do not think it advisable to offer recommendations of a more detailed nature than those contained in Appendix A to the Report of Special Committee No. 1.

11. The recommendations of Special Committee No. 1 as to regulations relating to identification and aircraft papers (see Clauses 7 and 8 of the Bill) and as to Clauses 10 and 11 of the Bill do not appear to call for any comment.

12. Clause 12 of the Bill is of the greatest importance as affecting the general rights of landowners in the air space over their land. This right has generally been recognised in English law to extend *usque ad coelum*, and, although some authorities have held that the right only extends to a height sufficient for the reasonable enjoyment of the land, any application of the *usque ad coelum* doctrine in its entirety would be fatal to the development of aeronautics. The clause as originally drafted in the Bill relieved the owner of aircraft from liability for trespass in respect of his flight over land in the British Isles, but preserved the common law rights and remedies of persons in respect of injury to property or person caused by the aircraft or by any person carried therein. We agree with Special Committee No. 1 that the clause does not proceed far enough in determining the respective rights and liabilities of the owner of aircraft and the landowner, and we adopt the suggestions of the Special Committee to extend the provisions of the clause in the manner indicated in their report. These suggestions may be looked at from two points of view, viz., the remedies of persons on land for trespass or material damage to their property and their remedies for nuisance.

Admittedly persons on land are practically powerless to ensure their own safety by precautionary measures against damage caused by the fall of aircraft or of objects carried therein. It is a matter of some doubt whether under existing principles of law persons suffering such damage would be called on to prove an affirmative case of negligence or intentional trespass. It is possible that the Courts might hold aircraft to be within the class of those things which the owner keeps or uses at his peril. We think it preferable that the principles applicable should be defined by legislation rather than that they should be left for solution by a series of judicial decisions; we think, too, that as far as damage done by aircraft is concerned the deprivation of the landowner of what is almost certainly an existing right of property should be compensated by what will be in effect an insurance of himself and his property against such damage. Nor do we think that in practice the expense of insuring himself against third party risks will prove very burdensome to the owner of aircraft.

As affecting the question of nuisance or trespass to the property of the landowner in the air space above his land, we have given careful consideration to the possibility of defining some altitude, flying below which would involve a civil liability on the owner of aircraft. We have come to the conclusion that to attempt to prescribe any such altitude is impracticable, and that it will be sufficient to protect the landowner by giving him a specific right of action for damages for actual nuisance caused in breach of flying regulations in the manner suggested by Special Committee No. 1. Since nuisances by aircraft are most likely to arise in connection with the ascent from and landing at aerodromes, we recommend that special attention should be paid to the flying regulations applicable to such ascent and landing.

13. We do not desire to add anything to the recommendations of Special Committee No. 1 as to Clauses 13-22 inclusive and Clause 24 of the Bill.

14. With regard to Clause 23, which defines, as between the United Kingdom and the remainder of the Empire, the extent to which the provisions of the Bill are to apply, we desire to emphasise alike the importance of uniform legislation, so far as possible, throughout the Empire on aeronautical matters, and of avoiding any appearance of dictating to the Dominions or of infringing in any way their local autonomy. In our view, the clause rightly applies universally throughout the Empire the provisions of an international character—namely, those relating to registration, collisions, aircraft papers, and signals of distress—and we hope that His Majesty's Government will take steps to circulate the Bill, in the form in which they may themselves adopt it, to the various Dominion and Colonial Governments, so that the latter may have an opportunity of considering whether they will adopt it, with or without modifications to suit local conditions, for their own territories, and, if so, of expressing their views as to the means to be employed for applying it to those territories.

15. In the remaining paragraphs of their Report Special Committee No. 1 have dealt with various questions relating to aerodromes. We approve their recommendations, and we would emphasise the suggestion made in paragraph 11 of Part II of their Report, that the clauses necessary to give effect thereto should be added to the Bill.

CHAPTER II.

Technical and Practical Questions as to the Possibilities of Performance of Aircraft, and as to the Requirements of Aerial Services.

1. The reports of Special Committee No. 2, which are primarily concerned with the practical possibilities of aeronautics from a scientific and technical point of view, are in the main of so highly technical a character as to make them unsuitable for detailed examination in this Report. Attached to them will be found a series of appendices the general effect of which has been summarised, so far as it appears possible to summarise it, by the Special Committee. We desire to record our view that the detailed reports contained in these appendices represent the results of much experience and of much research by those most competent to express authoritative opinions on the subjects with which they deal, and that the conclusions at which they arrive are based upon the most reliable data ascertainable at the present time.

2. We agree generally with these conclusions, and strongly support the view that the carriage of mails, of passengers, and of certain classes of goods by aircraft will present no difficulty from the technical point of view. We are confident, that demands for aerial services to provide such carriage will arise immediately at the conclusion of the war, and that it is imperative that every endeavour should be made to prepare for these demands.

3. It is scarcely necessary to point out the extreme importance to this country of being first in the field in the matter of aerial transport. We concur with Special Committee No. 2 in thinking that an experimental service should be organised as early as possible, but this recommendation should not be understood as implying that all other aerial services that may be suggested should await the final results of the experiment. On the contrary, we think that special measures should be taken, whether by direct State effort or by the encouragement of individual enterprise, with the object of commencing the scheme of transport mentioned by Special Committee No. 2 at as early a date as possible on the conclusion of the War.

4. Owing to the absence of any reliable data to serve as a guide, it has been impossible for Special Committee No. 2 to frame any estimate of the

running costs of aerial services under peace conditions, and consequently of the volume of aerial traffic likely to be forthcoming. The reasons for their inability to deal fully with this part of their subject are clearly given in their final report, and we recognise that they are conclusive, and that no good purpose would have been served by putting forward estimated figures of running costs which, from the nature of the case, would necessarily have been almost wholly the results of guesswork. Nevertheless, it seems worth while to draw attention to certain considerations affecting the matter, if only with a view to pointing out the factors which must limit the costs of aerial services if they are to hold their own in competition with alternative means of transport, and which are likely to limit the demand for them.

5. It is necessary to distinguish with reference to alternative means of transport (the alternative means being surface transport) between developed and undeveloped countries. In developed countries the governing advantage of aerial over surface transport must be speed. The extent of the advantage will vary with the effectiveness of the alternative means, but where alternative means exist it must be assumed that they will be improved and rendered fully effective. In undeveloped countries the advantage will lie with the means of transport best calculated to provide access to points previously inaccessible, and the absence of road or railway communication must add vastly to the commercial importance of the ubiquitous flightways of the air. In the case of countries in or between which surface transport facilities are interrupted, as, for example, where there is the interruption of a sea passage, both the factors above mentioned should operate to the advantage of aerial transport.

6. In the paragraphs which follow we have regard chiefly to developed countries where aerial transport is called on to eclipse the speed of surface transport.

7. High load and speed are antagonistic elements in the problem. To secure high speed, the commercial load must be kept within narrow limits. From the figures submitted to us it would appear not to exceed 25 per cent. of the total loaded weight of an aeroplane. That is to say, that the loading efficiency or the ratio of useful load to gross weight in an aeroplane is only poor. On this account it would seem as though aeroplane transport must always remain auxiliary to surface transport, and that speed must always be in the end the predominant factor of advantage.

8. Comparing the train with the aeroplane, the train as a traffic unit of movement is large. There must, therefore, be wider intervals of delay for the accumulation of loads between successive units than in the case of the aeroplane. The aeroplane is a small unit, and therefore a flow of urgent traffic can be given by a constant succession of units from the aerodrome, with consequent time economy. The aeroplane affords the better time-saving the longer the journeys, because in long journeys the time lost between the home and the aerodrome is a less appreciable factor; the saving of time from speedy flight only counteracts this loss for journeys in excess of some minimum distance.

9. The absence of a track is a great financial advantage. The expenses standing in lieu thereof are far less, viz., the cost of landing grounds, wireless installations, weather-reporting services, and signalling of routes at night or in fog. The cost of landing grounds will only be a small factor per "aeroplane mile" in any reasonable commercial scheme of transport, but as aeroplanes become increasingly reliable the need for alighting grounds will not be wholly removed, since safety is a paramount condition; moreover, multiple-engined machines, desirable as they are from the point of view of safety, are commercially justified only when the loads are great enough to warrant aircraft of this size.

10. In canvassing the traffic expectations of the immediate future, a distinction may be drawn between passenger and goods traffic.

Passenger traffic divides itself into two distinct sections, that which moves for business and that which moves for pleasure. Business traffic will turn primarily on speed and reliability, and will consist of inward and outward traffic where rapidity of movement is an important consideration. Economy of time is of great importance to many business men who find absence from their regular place of work disadvantageous. As it becomes possible by aeroplane to fly 400 to 500 miles out and home within the day, and to give a reasonable interval for the conduct of business between the flights, so it becomes likely that many business men will avail themselves of the opportunity.

The occasional use of single machines for rapid journeys in any direction rather than along a fixed route, carrying occupants who pay special fees for the high speed, will probably be one of the early and increasing lines of development. It will educate the public and prepare them for regular services. This could be undertaken immediately peace comes, and would not be open to the same objection as any premature attempt to run a daily service to scheduled time.

With regard to passenger traffic generally, the question of safety in connection, more particularly, with aeroplanes will be of the highest importance. The large number of accidents which occur at the present time are, in our opinion, chiefly due to inexperience and taking risks during training and practice which would not be justified in ordinary times. This subject is no doubt constantly before the authorities in the experimental departments connected with aeronautics, and investigations are, it is understood, being constantly made into the cause of accidents by the Accidents' Investigation Department of the Air Ministry. Improvements are continually being made with the object of reducing accidents, and in the ordinary course of events it is not too much to expect a large reduction in their number at the conclusion of the War. Thus the chief deterrent to flying becoming universal will be removed without any remarkable invention being made.

11. Pleasure traffic will depend on novelty, comfort and safety. Flight may afford pleasure in itself, but pleasure traffic will be seasonal in character, will depend largely on weather, and will be more costly the more irregular it is. There is likely to be small regular demand, which will grow as flight movement becomes a habit. The demand in the immediate future will probably not be extensive, owing to the cost, but it would appear practicable to open routes from well chosen centres.

12. Goods traffic will be for (a) mails and (b) general goods. Commercial considerations are not the only ones to be taken into account in determining upon an aerial mail. It is not indispensable that the cost of a letter by aerial mail should be fully borne by the service, if Imperial or other reasons demand that the use of aircraft shall thus be developed. Mails offer a most promising class of traffic, because the load to be carried is reasonably uniform, the weight small, and the demand for speed great. The prospects of an aerial mail will be best when the conditions referred to in paragraph 5 above as operating to the advantage of aerial transport make themselves most markedly felt.

It has been shown in the Interim Report of Special Committee No. 2 and in Appendix E appended thereto that in the case of services between London and large provincial towns a flight of at least three hours, at an average, say, of 100 miles an hour, is required for the speed of an air-mail service to reveal itself, and to offer a sufficiently marked saving of time over land transit; on an overseas journey, such as the passage to Dublin, the saving of time is much more evident. It would appear necessary to charge some such fee as 1s. or more per letter for an inland air-mail to prove remunerative.

The cost of electric cable communication, say, to Johannesburg, at 8s. 10s. per 100 words (a message taking about 24 hours to reach its destination), can be contrasted with the cost, say 2s. 6d., of sending a letter of 5,000 words to the same spot in six days by aeroplane. The London mail could in the

future be conveyed to Calcutta in four days, as against 16 days, the minimum at present. These instances illustrate the intrinsic utility of air services, apart from the value of making closer links within the Empire and of giving support to the construction of aircraft so as to be ready for war emergencies.

It is more difficult to settle the reasonable expectation of general goods traffic, which must take the form of express parcels, usually of small weight. Furs, lace, jewels, precious metals, extracts, essences, valuable feathers, &c., might be carried by air because of their high value; also rare and out of season fruits and vegetables, flowers, and perishable articles generally. Newspapers and periodicals afford scope for aerial services, because news grows stale quickly. Drugs, dyes, chemicals, medicines, optical and surgical and other instruments will be so carried, as often these are wanted quickly. Wherever, for want of some article, life is endangered or industry is at a standstill, as where some spare part or tool is required for a machine, the aeroplane will afford the quick remedy, and its flight will be profitable. Cinematograph films, gramophone records and commercial samples may figure in the class of goods carried by aircraft. Their rapid distribution will quicken exchange, and this will react to increase the volume of traffic, but the whole series of illustrations above given tends only to show how limited the total volume or weight of aerial goods traffic is likely to be in developed countries.

13. The technical appendices to the reports of Special Committee No. 2 contain interesting information as to the respective capacities of the airship and the aeroplane. We think it advisable to make some general comparison, from the commercial point of view, between the two classes of aircraft based upon this information. For this purpose the largest type of airship is taken as an example, since it is found that as the size of an airship increases the ratio of its useful load to gross weight improves, e.g., for a ship of 60 tons gross, 30 tons of disposable load are available. This represents roughly nine times the load carrying capacity of the largest modern aeroplane. The prime cost per lb. of disposable load in the case of an airship is estimated at almost one-half the prime cost per lb. in the case of an aeroplane. The economic limit of the journey without landing is about 1,000 miles in the case of an airship, as against 500 miles in the case of an aeroplane. The airship, therefore, has the advantage of a greater load capacity; but its speed, under present conditions, is slower, being probably not more than 60 miles per hour. In this respect the performance of the airship on overland routes would appear in general to be open to keener competition from rail transport. On the other hand, on sea routes the airship will, save in contrary winds, have a marked advantage over steamships as to speed. As compared with the aeroplane, the cost of handling and housing airships will be higher, and, until open air mooring is fully developed, the regularity of airship services will be more adversely affected by high winds than that of aeroplane services. In journeys in which speed is not the most material factor, and particularly where passengers are being carried, and safety is consequently a paramount consideration, the airship offers advantages over the aeroplane in the way of comfort, ease of navigation, capacity for safe flight at low altitudes, and high ratio of disposable load.

14. On the question of landing grounds along aerial routes, there was some divergence of opinion in Special Committee No. 2, and it will be observed that the Interim Report of that Committee is only signed by Mr. Holt Thomas subject to a reservation on this point. While we agree with the majority of the Special Committee in not feeling able to recommend that chains of landing grounds should necessarily be laid out at regular and comparatively short—say 10-mile—intervals along aerial routes, especially in developed countries, we consider, nevertheless, that the advantages of lines of landing grounds on certain main routes hereafter to be laid out would be very great, and that such lines would largely assist the development of civil aerial transport. In undeveloped countries regular chains of landing grounds at suitable intervals along aerial routes will be indispensable; and in such countries the consequent expense will be less material in view of the comparative advantages which aircraft will enjoy in competition with other forms of transport. Regular sea stations for the landing of aircraft are at the outset essential if trans-oceanic aerial transport is to be seriously attempted. It is recommended that when questions of laying out, maintaining or abandoning landing grounds for military purposes have to be considered, regard should be had, if possible, to the probable needs of civil aerial transport hereafter. The establishment of landing grounds within urban areas should not necessarily be precluded, and the institution of rapid transit schemes between aerodromes and town centres, such as Post Offices, would be of great value. Developments in aeroplane design may permit of landing safely and conveniently within a narrow compass in the future; and as has already been indicated, a central situation for an aerodrome for civil aerial traffic has considerable importance.

15. We recognise, however, that military considerations must override all others, and, though we have necessarily dealt with our subject matter mainly from a commercial point of view, we would emphasise the importance: first, of the need that all established commercial air routes with their aerodromes and landing places should be suitable for strategical and tactical use in the event of war; and, secondly, of the need for the rapid convertibility in the same event of some types of commercial aircraft to military uses. We do not offer detailed suggestions on these points, which appear to be peculiarly within the province of the Air Ministry; but we record our strong opinion that it is vitally necessary, in the interests of national safety, that all air routes established should conform fully to military requirements, and that the development and manufacture of types of commercial aircraft should for a long time be governed by the requirement that they should be in some manner of effective military use, and that this requirement should be satisfied even at the cost of a serious diminution in the commercial value of both routes and craft.

16. With regard to the marking of aerial routes we agree with the practical suggestions of Special Committee No. 2. It will be observed that the Special Committee do not recommend the institution of a general system of marking for the whole country, but suggest that if companies operating commercial routes provide their own schemes of marking, these should be subject to some central control for the purpose of avoiding a possible confusion arising from the employment of different schemes. We are of opinion that it will not be necessary for the State to lay down any definite scheme for the provision of route marks. Probable improvements of signalling by directional wireless and of other methods of signalling from aerodromes by night and day would seem to make it inadvisable to embark upon the organisation of any universal system of arbitrary markings.

17. In concluding that part of our report which deals with the practical possibilities of aerial transport we desire to draw attention to the great importance of meteorology in connection with aerial routes and services generally. The Interim Report of Special Committee No. 2 deals more particularly with the dissemination of meteorological information, and we propose to touch upon the problems of meteorological research at a later stage in the present report. The practical suggestions contained in the Interim Report of Special Committee No. 2 and in Appendices G and H to that Report can be used as a basis for a system of meteorological stations which, in our opinion, should be organised immediately after the conclusion of the War. The provision and management of such a system are matters which we think should be left to the State and not to private enterprise.

CHAPTER III.

Business Questions Relating to the Position of the Aircraft Manufacturing Industry after the War, the Probabilities of the Establishment of Aerial Transport Services, and the Steps which would be necessary for the maintenance of this Industry and for the Development of these Services.

1. Special Committee No. 3 were concerned primarily with business questions relating to the position of the aircraft manufacturing industry after the War, with the probability of the establishment of aerial transport services and with the effect which the establishment of such services might have on the maintenance of the manufacturing industry.

2. The Special Committee were impressed with the importance of keeping alive the aircraft manufacturing industry in the interests of National Defence. In order to enable the industry to respond to war emergencies, they expressed the view in their first report that the services of the industry should continue to be employed for the design and development of Naval and Military aircraft and for the carrying out of the national construction of aircraft for the future, and that this would enable the design and construction of aircraft for civil transport purposes to grow on a sound and permanent basis. At the same time, in their first report they gave their reasons for believing that the development of civil aerial transport services reasonably to be anticipated at the end of the War, if no special steps are taken to foster it, will not be sufficient to keep the manufacturing industry alive, and will not for some years to come involve any appreciable volume of orders being placed with the producers in this country.

3. We see no ground for disputing this conclusion, for though, as we have said in paragraph 2 of Chapter II of this Report, we are confident that demands for aerial services to provide for carriage of mails, passengers, and of certain classes of goods will arise at the end of the War, we apprehend that, as we have said at the end of paragraph 12 of the same chapter, the total volume of aerial goods traffic to be anticipated will be very limited, and that even on the most hopeful view of the probable extent of the demand for aerial carriage of mails and passengers, the number of aircraft required to meet it will be small in comparison with the vast number now being produced for the purposes of the War.

4. The aircraft producing industry in this country has developed during the War in a phenomenal manner, solely owing to the unexampled demands of the naval and military authorities, and has grown to considerable dimensions in Canada also, where before the War it did not exist.

5. This great industrial organisation, amply equipped as it is with capital, material, machinery, expert knowledge and trained labour, is in anything but a secure position. Fostered as it has been wholly by the exceptional conditions of the last four years, it must wither, and very rapidly, in proportion as these conditions or their equivalent cease to obtain.

6. We are thus led to consider a question raised by General R. M. Groves at the meeting of our Committee at which the first Report of Special Committee No. 3 was presented, the question, namely, of the importance in the widest national and imperial interests of the development of the use of aircraft after the War. If it appeared that the public interest was not involved in the continued and extended use of aircraft, the dwindling of the aircraft manufacturing industry, with whatever hardship to individuals it might be accompanied, would not be a national disaster, but we could not neglect the possibility that no less vital an interest than the safety of the State itself might be concerned in the matter. Accordingly we invited Special Committee No. 3 to report further to us on the question raised by General R. M. Groves.

7. The supplementary Report of Special Committee No. 3 appears to us to go to the root of the problem, and we agree with that Report in believing that the development of civil aerial transport services, in order to create a market for the manufacturing industry and consequently to enable it to maintain its power of production and of progressive improvement in design, to the extent and for the reasons given by the Special Committee, is essential for the safety of the Empire. We agree that aerial transport services cannot be developed by the ordinary commercial methods so as to secure the required result, and that State action of some kind in developing aerial transport services is therefore unavoidable.

8. As to the form of State action to be taken, it will be observed that two main alternatives are discussed by the Special Committee under the heads of:—

- (a) State assistance to private enterprise.
- (b) State ownership or participation in the ownership of aerial transport undertakings.

The Special Committee have not felt able to advise as between the two alternatives; and, similarly, we feel that the problem, raising as it does issues far larger and graver than at the outset of our enquiry we could have expected to be confronted with, is one for His Majesty's Government itself rather than for us to determine upon. The choice involves the consideration of political questions, labour questions, and questions of national finance upon which a Committee constituted as ours is, is hardly competent to advise, and which seem appropriate for Cabinet decision. We confine ourselves, therefore, to saying that, in our opinion, the form of State action to be taken may be either of those described under heads (a) and (b) above, or even a combination of the two, but that the decision in the matter must rest with His Majesty's Government. The arguments for and against each of these alternatives are fully set out in paragraph 7 of the supplementary report of the Special Committee.

9. In paragraph 5 of their Supplementary Report the Special Committee gave a picture of the extent of the development of aerial transport services which should be aimed at. We agree with their view and desire to emphasise the importance of a general scheme of main air-routes being planned in advance, so that when aerial services come to be put into actual operation they may be in harmony with the scheme.

10. While considerations of national security afford the all-important reason for advocating State action for the development of aerial transport services, other advantages, also to be hoped for from such development, should not be overlooked. Among the most important of the national benefits to be hoped for are increased facilities for friendly intercourse with foreign nations, and, still more, the improvement in inter-communication between the widely-scattered countries which make up the British Empire. So far as the Governments of the self-governing Dominions and of India are concerned, it will be for those Governments, to whom copies of this Report might, we suggest, be forwarded, to determine their own attitude in regard to the problems presented by the subject of our discussions. Whether they decide themselves to run or to join with the British Government or each other in the running of aerial services, or not, it is in any case to be hoped that by arrangement with the British Government they may be willing to give all necessary facilities for the arrival and departure of British aircraft. Such facilities would include the provision of aerodromes and landing places or the grant to the authorities controlling British aerial services of the right to acquire them for themselves. The Dominion and Indian Governments would, we hope, also be willing, unless they were running State-owned aerial services of their own, to allow the British authorities to tender to their Post Offices for the carriage of their mails, and generally to operate in their territory on the same terms as their own citizens. It has already been shown that the longer the distances which it is desired to cover rapidly the greater are likely to be the commercial advantages enjoyed by aerial transport for

such purposes as the carriage of mails as compared, e.g., with rail and steamer transport, whence it appears that the Dominions and India, owing to their great geographical area and the wide distances which, in many cases, separate their important centres of population, offer a fruitful field for the development of civil aeronautics.

11. It requires but little imagination to envisage the possibilities of aerial communication in such a country as Canada, where the journey from Halifax to Victoria is one of nearly 3,000 miles, passing through such centres as Quebec, Montreal, Ottawa, Toronto, Winnipeg, Calgary, and Vancouver, or in Australia, where a journey round the coast from Brisbane to Perth, through Sydney, Melbourne, and Adelaide is slightly longer, or in the Union of South Africa, where a journey from Capetown to Johannesburg is one of 800 miles, and leads on to Bulawayo or Salisbury, and thence across Northern Rhodesia, and what was once German East Africa, to British East Africa, the Nile Valley, and Cairo. It is obvious how important a bearing the improvement in inter-imperial communication is likely to have on that greatest of problems, the problem of the future relation to one another of the self-governing States of the British Empire.

12. We are of opinion that in all matters of inter-imperial aerial traffic, as, for instance, in the formulation of such a scheme of main aerial routes as is referred to in paragraph 9, in so far as these routes extend beyond the limits of the British Isles, joint or co-operative action by His Majesty's Government and the Governments of the Dominions and of India should, wherever possible, be secured.

13. In the case of the Crown and other Colonies and Protectorates, the British Government is in a position more directly to control the development of civil aeronautics and to secure the facilities in the way of aerodromes, landing grounds, and the like, that it requires for the transport in which it may be interested. In many cases the Crown and other Colonies and Protectorates, being of great geographical extent, offer the same favourable opportunities for aeronautics that we have noticed in the case of the self-governing Dominions and India. Some of their governments may be disposed to assist the formation of aerial transport companies or to start aerial services of their own. These would be matter for settlement between them and the British Government, but it seems to the Committee to be likely that such services would be valuable in many remote parts of the British Empire, not only for postal, but for general administrative work, while the setting up of organisations of this kind would form valuable links in schemes of long-distance services connecting the United Kingdom with other parts of the Empire, and would, moreover, encourage the design and building of special types of machines suitable for use, e.g., on large rivers or lakes. In all countries, in which other means of communication are few and difficult, aerial services would be particularly valuable for purposes of exploration and survey, owing to the remarkable developments brought about by the War in the art of aerial photography. The apparatus used has reached so high a degree of perfection that map-making, or the correction of maps already made, by means of aerial photography should present comparatively little difficulty. Aircraft should also provide a valuable means of aiding research in zoological and other physical sciences in many parts of the world. In setting up aerial services in remote parts of the Empire the State should, we think, if necessary, assume the duty of providing such landing facilities and of marking such routes as may be necessary for certain main lines. The acquisition of the necessary land would not, except in and near large towns, be a matter of any great cost or difficulty.

14. So far as the policy of His Majesty's Government is concerned, we desire to lay the strongest emphasis on the necessity, to which Special Committee No. 3 have called attention in the last paragraph of their Supplementary Report, of an early decision. To postpone decision until after the War might well be to allow the manufacturing industry to languish for lack of orders, and thus to lose the means of carrying out any policy that might eventually be determined upon. If, therefore, His Majesty's Government accept our main proposition that the fullest possible development of civil aerial transport services immediately after the War is a national necessity, and that it cannot be achieved without State action, it will be necessary for them to settle at once what form that action is to take. If it is to take the form of assistance to private enterprise, it will be necessary for His Majesty's Government to enter into communication with the promoters of such enterprise, and to satisfy themselves as to the sufficiency of their proposals. If it is to take the form of direct State ownership of or participation in aerial transport services, it will be necessary to settle precisely what services are to be undertaken, and to prepare in advance all the measures necessary for bringing them into operation immediately on the declaration of peace. In either event, the negotiation of a convention, at any rate with our Allies, as recommended in our Interim Report, and, probably, the arrangement of agreements with the Dominion and other Governments of the Empire, to regulate inter-imperial and international flying, would seem to be indispensable preliminaries to action, and should, we venture to suggest, be taken in hand as soon as possible.

CHAPTER IV

Questions of Labour Arising in the Aircraft Manufacturing Industry and in Aerial Transport Services.

1. Special Committee No. 4, who were concerned with labour questions connected with the production and use of aircraft, have submitted a majority Report, and a minority Report signed by the chairman, Mr. H. G. Wells.

2. We find ourselves in agreement with the majority's conclusion (from which Mr. Wells does not dissent) that there are no distinctive labour problems specially affecting the industry of aircraft production as such, capable of being differentiated from those great problems connected with the relations between employers and employed generally, and in the engineering trades in particular, which are at the present time receiving such close attention from other bodies better qualified to deal with them than we are. Similarly, we agree with the majority of the Special Committee that the case is the same in regard to the labour to be employed in aerial transport services, which, for our present purpose, we feel can hardly be differentiated from labour employed in other transport services. Nor do we feel that the manufacture and the prospective civil use of aircraft give rise to special problems peculiar to themselves in connection with the education, in the ordinary sense of the word, of the workpeople engaged therein as distinguished from expert designers of aircraft and flyers whose training is discussed in Chapter V of this Report.

3. With a view, however, to securing that pride of craft on the part of the workman which is universally recognised as desirable in the aircraft industry, in common with all other industries, we desire to emphasise the necessity for co-operation between employers and employed in order to establish mutual goodwill, understanding, and sympathy in their common enterprise. We recognise that much has already been done in this direction, but we consider that further development and systematisation are necessary, and that the responsibility for this further development rests in the first instance mainly with the employers.

4. It is hardly within our province to attempt to indicate what precise steps should be taken towards the desired object; but we would venture to suggest that the popularisation among the persons occupied in the industries concerned with the production and use of aircraft of the great achievements and still greater possibilities of aeronautics is specially worthy of attention.

5. The question of the employment in aircraft manufacture of discharged soldiers and sailors, which is dealt with in Mr. Wells's Minority Report, has, we observe, been referred to another body, viz., the Trade Advisory Com-

mittee (Shipbuilding and Engineering Trades), whose report (No. X. of the "Reports upon Openings in Industry Suitable for Disabled Soldiers and Sailors") has been issued to the public by the Employment Department of the Ministry of Labour in collaboration with the Ministry of Pensions.

CHAPTER V.

Problems of Scientific Research and the Special Education of Expert Designers, Engineers and Pilots.

1. Special Committee No. 5 were concerned with the problem of research in aerodynamics and meteorology, the sciences primarily connected with aeronautics, and with the problem of the special scientific education of expert designers, engineers, and pilots.

2. Subject to the following observations, we agree generally with their views and recommendations, and we desire to lay special stress on the urgent necessity of the compilation of the bibliography and treatise, embodying the results of the scientific work which has already been done in aerodynamics, to which they refer in paragraphs 1 to 4 of their Interim Report. The material available is voluminous but scattered. Much of it would require for its full interpretation the assistance of various individuals who have originated or directed particular enquiries; and, as things stand at present, it is a matter of great difficulty for a scientific investigator to inform himself accurately as to what has already been ascertained with regard to any particular branch of aerodynamical science which he may be studying. It is an indispensable preliminary to proper scientific research in aerodynamics that there should be a complete and reliable treatise on the subject kept constantly up to date as the science progresses, and thus containing in convenient form the whole body of knowledge available at any given time. To the three main sources of existing information mentioned by the Special Committee in paragraph 2 of their Interim Report we should add a fourth, viz., the experience and knowledge of the expert designers now employed by various aircraft manufacturing firms.

3. With regard to the method of carrying on in the future (1) tests and investigations of finished products in the shape of aircraft engines and sundries, and (2) further research including physical model and full scale research (the subject dealt with in paragraphs 6 to 9 of the Special Committee's Interim Report), it appears that the choice lies between the work being done either (a) by an organisation such as the contemplated research association of the Society of British Aircraft Constructors and Aeronautical Society, which should be financed by the Society of British Aircraft Constructors with the assistance of grants from the Department of Scientific and Industrial Research, or (b) by a Government authority such as the National Physical Laboratory, directly financed by the State. We would recommend that the first alternative be adopted if possible; but, failing that, the second alternative should be resorted to.

4. With regard to meteorology, while we agree with all that has been said by the Special Committee, we desire to call special attention to the necessity, mentioned by them in paragraph 13 of their Interim Report, of ensuring co-operation between the Meteorological Office and the Authorities controlling the meteorological stations in the Dominions. It is not, indeed, only the self-governing Dominions that are concerned in this matter. Similar work done by the Governments of the Crown and other Colonies and Protectorates may well be of great importance, particularly in the case of long-distance routes passing through remote parts of the Empire, and we would recommend that everything possible should be done to strengthen and increase the efficiency of the meteorological offices of the Colonies and Protectorates. It would also be desirable that steps should be taken to co-ordinate the work of the Meteorological Offices of groups of Colonies and Protectorates geographically close to one another, as, for example, the East and West African groups of Colonies and Protectorates. Combined results are likely to be more valuable than the unco-ordinated results of the work of a number of comparatively small stations.

5. In regard to Accident Investigation, while we agree with the Special Committee in paragraph 16 of their final report that a distinction may legitimately be drawn between privately owned aircraft and aircraft carrying passengers for hire, we think, nevertheless, that the appropriate Government Department should have power to order an official investigation to be held, if it is thought necessary in the public interest, in any case of serious accident, no matter what class of aircraft may be involved in such accident. Enquiries might, at the discretion of the appropriate Government Department, be conducted through the agency of an unofficial body, such as the Public Safety and Accidents Investigation Committee of the Royal Aero Club and Aeronautical Society. It appears to us that the knowledge that a State authority was empowered to hold an investigation into any case of serious accident, if it thought fit, would give the public a sense of security, and would thus be to the advantage of the aerial transport industry rather than otherwise. It does not seem necessary to apprehend that a Government authority would hamper the industry by directing unnecessary enquiries into a number of trifling accidents arising from easily ascertainable causes.

Concluding Observations

1. In conclusion we desire to point out that preliminary action has already been taken by several of our Allies for the purpose of preparing for civil aerial transport, in some cases by the institution of experimental postal services. It has been reported, also, that enemy countries have moved in this direction. We consider it of vital importance that the British Empire should not be allowed to lag behind other nations in this movement, more especially as this might have a very serious effect upon the position of the Empire with regard to the international aspects of aerial transport. We would urge that there is a large amount of preliminary work which could be commenced at once. In Chapters II, III, and V of our Report we have already indicated the urgency of the following matters:—Preliminary enquiries as to routes, landing grounds, and aerodromes, involving in the two latter cases consultation with local authorities; the necessity for preliminary discussion with the Dominions and our Allies on the broad questions of principle dealt with in the reports of Special Committee No. 3; the immediate establishment of the Bureau in aid of Research as suggested in the Report of Special Committee No. 5. We consider, also, that it is a matter of urgent necessity to establish a system of propaganda throughout the Empire in order to convince the whole nation of the vast importance and possibilities of aerial transport and to familiarise the Governments and the local authorities with the subject. There is evidence of the initiation of such a system in enemy countries.

2. In order to carry out these views we therefore recommend that a special branch (commencing on quite a modest scale) should be formed at once for the purposes specified under the Air Ministry, to ensure that all necessary preliminary action be taken without delay—definite responsibility being imposed upon the Air Council. We would venture, further, to suggest that any executive authority which may be established for the purpose would be greatly assisted if an advisory panel could be formed of gentlemen who have given time and thought, and have expert knowledge of the problems dealt with in our Report, and who could be consulted as occasion demanded by the executive authority on questions arising in the course of its work.

3. The Committee desire to express their warmest thanks to Mr. Douglas Malcolm, Secretary; Mr. Tindal Atkinson, Assistant Secretary; and Mr. Harper, Technical Secretary, for the admirable manner in which they have discharged their duties, and for the invaluable assistance which they

have rendered, both to the Special Committees and to the Main Committee, in compiling and drafting their reports.

Signed by:—John Baird (acting Chairman), Butler Aspinall, Atholl, L. Bairstow, H. T. Baker, Capt. F. S. Barnwell, A. E. Berriman, Maj.-Gen. W. S. Branker, J. H. Balfour Browne, Col. P. N. Buckley, R. O. Cary, M. D. Chalmers, Alan E. L. Chorlton, G. B. Cockburn, W. Barnard Faraday, R. T. Glazebrook, G. Grindle, Brig.-Gen. R. M. Groves, R.A.F., L. N. Guillemaud, N. G. Gwynne, H. Frank Heath, W. Joynton-Hicks, G. Holt Thomas, Lieut.-Col. Douglas H. Hyde-Thomson, R.A.F., Lieut.-Col. H. G. Lyons, R.B., Thomas Mackenzie, Brig.-Gen. E. M. Maitland, R.A.F., Maj. W. Lockwood Marsh, R.A.F., Maj.-Gen. J. Whiteside McCay, Brig.-Gen. Montagu of Beaulieu, Lieut.-Col. J. T. C. Moore-Brabazon, R.A.F., Arthur Morley, Morris, G. E. P. Murray, Lieut.-Col. Mervyn O'Gorman, George H. Perley, J. E. Petavel, Frank Pick, Lieut.-Col. J. C. Porte, R.A.F., Col. J. W. Pringle, R.E., Maj. E. Elvey Robb, R.A.F., Maj.-Gen. R. M. Ruck, W. P. Schreiner, Col. W. Sempill, R.A.F., Napier Shaw, J. D. Siddeley, Thos. Sopwith, Maj. T. Vincent Smith, R.A.F., Maj. G. I. Taylor, Charles Tufton, Arthur E. Turner, H. G. Wells, H. White Smith, H. J. Wilson. D. O. Malcolm, Secretary.—May 11th, 1918.

General Vyvyan was unable to sign the Report owing to absence from England on other duties.

"In signing the foregoing Report as Acting Chairman, I desire to make it clear that I do so without prejudice to any decision at which the Air Council, of which, as Parliamentary Under-Secretary of State for the Royal Air Force, I am Vice-President, may arrive upon any of the recommendations contained in the Report, and without attempting to anticipate any such decision.

"I should add that I fully concur in the recommendations contained in the Report regarded solely from the point of view of the development of civil aerial transport."

(Signed) JOHN BAIRD.

11/5/18.

Reservation by Mr. Frank Pick.

1. I think it would be unfortunate if a Report of such importance as that of this Committee were to go forward without someone taking upon himself the task of expressing an entirely different groundwork of policy towards civil aerial transport to that set out in the Interim Report of this Committee, confirmed as it is by further applications and developments in the Final Report.

We are in the midst of a war of which the concluding terms cannot yet be foretold. It is only natural at this time that warlike considerations should predominate in our minds. It is only natural that the sense of insecurity should drive us towards seeking greater security in great warlike measures. That we, as a nation and empire, should establish our security upon a firm and self-supported basis is accepted as a cardinal principle. But we are in the midst of a war of which the confessed object is to make the whole world secure, to render the appeal to the arbitrament of war for the future of less resort and of less avail, and whether this object will be achieved or not is still unsettled.

Apart altogether from the mere terms which will bring this war to a conclusion, there are reactions growing which will profoundly alter the circumstances of international relationships with the peace. Some factors in these reactions are already apparent and effective. There is the revolution in Russia, the advance in the power of labour, the political arrival of woman. I think it is fair to say that these factors tend towards an internationalism of a new order, one result of which must be the collapse and discredit of the old diplomacy. It is fair to expect that the secrecy of international negotiations will be done away, and with it most of the suspicion which secrecy always arouses; the system of bargain and counter bargain will be largely impossible. The world and they that dwell therein must cease to be regarded as the business assets of national firms.

2. I write in the spirit of hope. Such a view of the future must make the claim to aerial sovereignty wear a different aspect from that suggested by the Interim Report of this Committee with its annexes. The sovereignty of the air is in itself an academic or theoretical question. Each nation must be supposed to have the sovereignty in the air over its territories. The practical question is the only important one. How is the sovereignty to be asserted and exercised? Is each nation to make its own laws and fix its own rules and regulations, and then, by a process of bargaining one with another, to secure concessions and set up a series of more or less favoured-nation treaties or conventions, or are the nations as a whole to agree upon some international code of laws, with rules and regulations to follow, to be applied openly and equally among all nations upon some mutually enforceable sanction? If causes of offence are to be removed, the second alternative is the only acceptable one. I think, therefore, that in taking any steps towards the establishment of laws or of rules and regulations for civil aerial transport at this time care should be taken to avoid any commitments which would hinder the adoption of the second alternative at the earliest favourable moment. The door should be left open for the widest possible conference and the most general acceptance.

3. There are two other selfish reasons for this policy:—

(a) The strategic position of this country in relation to the air differs fundamentally from the strategic position in relation to the sea. So long as the shores of the North Atlantic are occupied by the leading civilised peoples so long the British position is advantageous as a centre of sea-power. But if air power is to usurp to any degree the place of sea-power—and this seems probable so long as flights over land hold appreciable advantages over flight over sea, which is the case under conditions as they exist to-day—so the position of a country placed centrally as regards land must be superior to the position of a country placed centrally as regards water. The German aims of Central Europe, Central Africa, and the Berlin to Baghdad approach to Asia are seen to be the more sound and the more dangerous as this idea is carried to fruition. The very scattered and discontinuous character of the countries constituting the British Empire becomes an obstacle to the development of aerial transport and aerial power. The British Isles are badly placed for aerial communication. Other nations bar the access to the great land masses associated to form the British Empire. A clear right of way free from restriction across France and Italy and Spain is essential to effective progress in inter-colonial air communications. Our self-interest, therefore, as a great Power lies towards an international settlement of air sovereignty.

(b) And for similar considerations our interest as a commercial and industrial people must lie in the same direction. The right to pass across other national territory without let or hindrance, relief from varying terms and conditions attaching to flight which may be onerous and irksome, the absence of Customs restraints or tariff restrictions, and generally the absence of the apparatus for hampering or artificially routing trade are all wanted. On all these grounds it is submitted that the case for an international settlement is strengthened.

I, therefore, dissent to the somewhat selective and particularist suggestions of the Main Committee approving, without qualification, the report of Special Committee No. 1.

4. I can only suggest that warlike considerations equally led to the decision to place the control of civil aerial transport with the Air Ministry, whose prime function must be warlike, the conduct of war or of preparations for war. The case for civil control of civil aerial transport was submitted to the Main Committee in the following memorandum (except for some slight amendments):—

(a) Civil aerial transport cannot be discussed apart altogether from military

aeronautics. There must be many aspects which they have in common just as there must be many aspects in which they are opposed. The policy and outlook of the one have no necessary connection with the policy and outlook of the other. The control, therefore, cannot be simple and complete in a single hand.

(b) The root principle of any allocation of shares in the control must be to provide separate representation of opposed aspects and policies, to secure adequate and impartial consideration, while at the same time securing common treatment of those aspects and policies which are at one.

(c) On the analogy of railways, shipping, canals, tramways, &c., the Board of Trade, in its capacity as a Ministry of Communications, would be the fitting department of the Government to be concerned with the commercial and civil aspects of aeronautics. On the contrary analogy of the decision of the Main Committee, shipping should be brought under the control of the Admiralty, and railways, roads, and canals under the control of the War Office in times of peace. Such a step could not, I think, be contemplated.

The recent reorganisation of the Board of Trade into a Ministry of Commerce and a Ministry of Public Utilities might be carried a stage further, and transport utilities placed together as a definite integral group of the whole, forming a Ministry of Communications, and leaving gas, water, electricity, and other supply services only to be comprised among public utilities.

(d) The need for a unified and single control of those matters which are similar in character and purpose applies with equal force here. There are many common considerations relating to the regulation and control of traffic quite apart from the particular means by which the traffic is carried. The Board of Trade has in the course of time built up an organisation and practice for dealing with these questions which a slight development would extend to cover aerial transport. Especial reference may be made to such questions as rates and charges, preferences, classification of commodities, efficiency of and necessity for service, accidents and accident prevention, trade agreements, &c., all of which have a commercial bearing rather than a merely technical bearing.

(e) The Air Ministry would continue to be responsible for all those aspects of aeronautics, other than commercial, being extended and developed to the best advantage and generally for all technical aspects. Its particular responsibilities would, I think, be properly extended from purely warlike responsibilities to cover:—

(1) The establishment, maintenance and operation of all aircraft belonging to the State or used for State purposes irrespective of the particular uses to which they are put or the particular Government Departments for which they are worked (e.g., Post Office);

(2) The establishment, maintenance and operation of all aerodromes and landing grounds belonging to the State (I would emphasise that the State ownership of aerodromes and landing grounds should be extended liberally beyond bare warlike or strategic requirements);

(3) The establishment, maintenance and operation of all auxiliary services essential to aeronautics such as weather observation and reporting (in conjunction with the Meteorological Office), wireless telegraphy, signalling, distinguishing of routes, &c., because such services must be common to all users of aircraft and can only be effective on a national scale;

(4) The ultimate control and responsibility for the central research and experimental station. (It is suggested that, apart from private effort, the Government should establish a central research and experimental station on a large scale and fully equipped to meet all the needs of the industry and the State under a representative constitution.)

(f) In addition to the purely commercial questions, the Board of Trade would appear to be the proper Ministry to be responsible for

(1) The licensing of aircraft and pilots;

(2) The investigation of accidents relating to aircraft employed for civil use;

(3) The establishment of rules and regulations for aerial traffic, including safety requirements for passenger services;

(4) The licensing and inspection of aerodromes and landing grounds not belonging to the State.

The Air Ministry would adopt the rules and regulations of the Board of Trade in connection with State-owned aircraft and aerodromes. The rules and regulations for aerial navigation and conduct generally would be a joint undertaking. The technical inspecting officers of the Board of Trade would be presumably seconded from the Air Ministry. A close relationship of the two would necessarily exist.

(g) Finally, the administration of the law and the prosecution of offences against the rules and regulations for aerial navigation or aerial traffic would be carried out by or under the supervision of the Board of Trade. It is essential, I think, that there should be a clear distinction drawn between civil and military administration, particularly in relation to the enforcement of law and order. It would be an eminent departure from constitutional practice to set up a Government Department chiefly of an executive character and primarily to carry out the work of operating aircraft for the State, and then permit it to undertake the administration of the law which it may itself fail to observe or to undertake duties of an administrative character on behalf of privately-owned aircraft in which State and private interest might very well be in conflict.

With this explanation, therefore, I dissent from the recommendation of the Main Committee that the Air Ministry should have its scope and powers extended to cover civil aerial transport.

5. I submitted to the members of Special Committee No. 3 a memorandum setting out a connected series of views on the question of the demand for and supply of aircraft after the war which failed to secure adoption. Without traversing that memorandum which is on record, I think that the report of that Committee and the report of the Main Committee on the subject fail to distinguish sufficiently between the actual output of aircraft by factories and factory capacity for aircraft production.

My understanding of the situation is that aircraft of types suitable for civil use will not comply sufficiently closely with the requirements of aircraft of types for warlike purposes to make them effectively interchangeable, and that aircraft of civil types will only serve for purposes auxiliary to military employment proper. That being so, a capacity to rapidly increase the output of machines of military type is the desideratum, rather than the continuous upkeep of large fleets of only partially serviceable aircraft.

It is agreed that there must be an establishment of aircraft kept up wholly for military purposes and fixed at such strength as the Government from time to time deems essential to the national safety. Beyond that the most material object to be assured is a capacity to produce swiftly a sufficiency of aircraft to meet the extravagant demands of war.

Experience in the present war has shown that many factories and industrial plants ordinarily engaged upon work of a useful and wealth-producing character can be adapted to the production of aircraft or parts of aircraft when occasion compels. It is, therefore, strongly urged that a proper scheme should be worked out for the co-ordination of such factories and industrial plants as are suitable to an enlarged production beforehand, so that the change-over on the outbreak of war may for the future be instantly effective. For this purpose it may be that modifications should be introduced in the lay-out and tool equipment which, while not seriously prejudicial to the tasks of peace, would enhance efficiency for the tasks of war. Reserves of tools, patterns, jigs, drawings, &c., should be held in readiness against the day of change, and should be constantly overhauled and kept up-to-date.

To the extent to which auxiliary factories and industrial plants can in this way be brought into account to bridge the enormous gap between the normal peace and war requirements of aircraft so the problem of the aircraft industry after the war becomes more manageable.

6. In addition to the omission indicated in the preceding paragraph, I regret that the Report of the Main Committee omits any reference to the economic limit which must be placed upon the expansion of aeronautics, seeing that there is little prospect of the immediate commercial return from the operation of aircraft being sufficient to support an adequate programme. The burden of armaments has been heavy in the past, but the trend of this war has been to build up a material equipment of artillery, tanks and other devices for warfare on land which must afterwards remain a costly addition to the establishment. Unless, therefore, some steps can be taken to limit armaments as the outcome of this war, the burden looks like being greater than can be borne with an army on a Continental scale, a preponderating

naval and aerial fleet on top of the debt charges consequent on the war itself. Here, again, until the conclusion of this war can be reasonably foreseen, it is hard to pronounce for any definite policy, but a hopefulness of outlook is not to be put aside as unjustified. There are limiting conditions to the aircraft industry which deserve notice in a report of this kind.

7. Nothing that I have said will, I trust, be taken to detract from my concurrence with the vital necessity of taking all measures which may be necessary for the safety and security of our Empire in whatever situation that may arise on the close of this war.

So many points are dealt with directly or by implication in the Report of the Main Committee with which I am in accord that I have signed that Report, but my signature must be qualified by the observations set out in this memorandum.

(Signed) FRANK PICK.

A VISIT TO THE SIDDELEY-DEASY WORKS

OWING to the restrictions imposed by the censorship, arising out of the conditions of war, it has not hitherto been possible to keep readers of "FLIGHT" informed of the developments that have taken, and are taking, place in the works engaged upon the production of aircraft material all over the country. As these restrictions have now, after the signing of the Armistice, been, if not removed, at least relaxed, it has become possible to give a certain amount of information relating to the interesting progress that has been made during the last four years. As an example of the enormous developments that have taken place in works engaged upon the production of aircraft material, mention may be made of the Siddeley-Deasy works at Coventry, which were visited on Friday of last week by representatives of the Press. Before attempting to give an idea of the Siddeley-Deasy factory in its present form it may be useful to give a brief summary of the activities that have resulted in such enormous developments to place the works among some of the largest in the country.

When the war broke out the Siddeley-Deasy Motor Car Co., Ltd., found themselves with a considerable number of cars, which they immediately placed at the disposal of the Government for war purposes. Thus for the first few months of 1914 and during the following year the company supplied, in addition to the cars, over a thousand Siddeley-Deasy motor ambulances to the War Office. Shortly afterwards an order was received for the construction of a large number of light lorries, oil tanks, field kitchens, &c., for the Russian Government. This order was duly filled, and the firm then had an order from the British Government for their entire output of ambulances, of which several hundreds were supplied. These did excellent service in all theatres of war, including Palestine, Mesopotamia, Salonika, and Egypt.

While thus busily engaged on motor cars of various types, the firm began to interest itself in aeronautical work quite early in the war. In December, 1914, the first order for aeroplanes was received, and in order to execute this a new factory had to be built. This was in operation a few months after its construction was commenced. About the same time the company were entrusted with the building in quantities of the R.A.F. 4a 12-cylinder engine. Of these a great number were constructed, while in the aeroplane shops a steady flow of R.E. 7's, and later R.E. 8's, was maintained.

As the altering conditions of air fighting and reconnaissance demanded, a new type of engine was put into production. This was the B.H.P., of which one was fitted in the first de H. 4 that made its appearance at Hendon. It was the Siddeley-Deasy Co. which was entrusted with the production in quantities of this excellent engine, and again the plant was increased to cope with the demands. To such good purpose was this done, and so well were the works arranged that a maximum output of 200 engines per week has been reached. In addition to complete engines a very great number of spare parts for same have also been manufactured. It is interesting to note, that the aggregate power of the Siddeley-Deasy en-

gine output amounts to the mere *bagatelle* of one and three-quarter million horse power!

This figure, taken in conjunction with the number of employees which has risen from about 400 at the outbreak of war to a present total of nearly 6,000, will serve to give some slight idea of the enormous developments that have taken place in this factory.

A walk through the Siddeley-Deasy works, which now cover an area of 25 acres, of which 19 acres are covered with factory buildings, reveals the fact, which might have been anticipated from the foregoing figures, that the works are excellently arranged, and equipped with the most up-to-date appliances, many of which have had to be specially designed for the work in hand. Naturally the factory dealing with the production of aero engines occupies the greater part. Here were seen in all the various stages of production, from the rough forgings to the complete engine undergoing their running tests, the numerous parts of the "Puma" Siddeley—as the B.H.P. is now called—as well as the component parts for a larger engine of about 650 h.p. which is known as the Siddeley "Tiger." One of these was also seen running, and the visitors were further interested in viewing a new radial air cooled engine of the firm's own design, of which little is known to the general public. In all fairness to the firm we shall refrain from giving particulars of this engine, but it may be stated that its design looked very pleasing, and that, although it is only in the experimental stage as yet, it gives promise of excellent results.

In the aeroplane shops were seen a number of R.E.8's complete with their R.A.F. 4a engines, while the visitors had the privilege of examining a large twin-engine bomber of the firm's own design, which incorporated a number of interesting features. This machine will now probably be slightly altered to serve as a passenger carrier.

One feature of the extensive works that impressed one was the care and consideration that was shown to employees. This was expressed not only in well lighted and airy work shops, but also in the new dwelling houses built close to the works, which include also a club house for the employees, with a lecture room and cinema, as well as a library. The company has also instituted an excellent canteen, which will seat 2,000 people at one time.

After witnessing such progress, the first thought that naturally comes to mind is: What will happen after the war? In this respect it is difficult to give, at this date, a specific answer, but it is at any rate highly satisfactory to learn that the firm have every hope of keeping the works up to their present magnitude, and of providing employment for the great numbers of workers that have been collected together during the war, although as regards the manner in which it is expected to be able to do this nothing can be stated at present. But, be it noted, when Mr. J. L. Siddeley puts his hand to a project, he does not release his hold until he has finished what he started out to accomplish.

A German Air Ministry

It is reported that a decree establishing an Imperial Air Ministry has been issued at Berlin, and Herr August Euler, of Frankfurt, is said to have been placed in charge with the title of Under-Secretary of State.

The Aeroplanes from Germany

ACCORDING to the official text of the terms of the Armistice issued on December 6th, it appears that the number of aeroplanes to be handed over to the Allies has been reduced from 2,000 to 1,700.

According to the *Kölnische Volkszeitung* about 150 aeroplanes assembled near Stuttgart to be handed over in accordance with the Armistice conditions were so damaged by the local Soldiers' Council while being taken to pieces that almost all were rendered useless.

Aerial Services in Germany

GERMANY has soon commenced her internal aerial services, some of the big towns being linked up in this way on December 7th. The fares for passengers are said to be 2½ marks per kilometre (about 4s. a mile), and the time allowed for the journey from Berlin to Munich, Cologne or Königsberg is 4½ hours. The Schutte Lantz Co. is rumoured to be building a machine to carry 40 passengers.

Another Scandinavian Conference

FROM information to hand from Stockholm, it appears that a conference of delegates from the various Scandinavian countries was to have opened in Copenhagen to-day (Thursday) to consider various aerial matters, including the settlement of legal and technical questions in preparation for a Scandinavian air service.

Personals

Casualties

Lieut. HUGH CLOVERY NOEL, R.A.F., 103rd Squadron, previously reported missing on September 24th, now reported killed in action on that day, aged 19, was the son of the late Byron Noel, Ockham, and Mrs. Noel, Clairville, Coulsdon.

Major ARTHUR HOLROYD O'HARA WOOD, R.A.F., who was killed while leading a patrol in France on October 4th, aged 28, was the elder son of Mr. and Mrs. O'Hara Wood, East St. Kilda, Melbourne, Australia.

Lieut. RONALD G. U. ARBUTHNOT, 16th Lancers, attached R.A.F., who was accidentally killed on December 3rd, while flying at London Colney, was the youngest son of the late Col. George Arbuthnot, R.H.A., of Norton Court, Gloucester, formerly M.P. for Hereford, and of Mrs. Arbuthnot, of the Cedar House, Hillingdon, Middlesex. He was educated at Summerfields and Eton, and was a keen cross-country rider. At the outbreak of the war he enlisted in the 19th Hussars, receiving a regular commission in the 16th Lancers in September, 1914. Later he volunteered for the Cavalry Machine Gun Corps, with which unit he was seriously wounded at Bourlon Wood, after three year's service overseas. On returning to England, he became attached to the R.A.F.

Sec. Lieut. ANTHONY BLYTON BEESLEY, R.A.F., who died on December 1st of pneumonia, aged 18, was the second son of Dr. Beesley, Exmouth.

Lieut.-Col. DUDLEY CORBETT, A.A.M.A. Midland Area, H.Q. R.A.F., of St. Thomas's Hospital, and late of 30, Welbeck Street, W., who died suddenly at Felixstowe on December 4th, of influenza, was the eldest son of the late R.S. Corbett and Mrs. Corbett.

FRANCES MARY DULCIE, Driver, W.R.A.F., who died on November 13th at the Military Hospital, Mexboro', Yorks, was the elder daughter of the Rev. D. E. and Mrs. LLEWELLYN JONES, Maindee Vicarage, Newport, Mon.

Sec. Lieut. HENRY TARRANT EYRES, The Queen's Regt., attached R.A.F., who was killed on November 9th, while night flying in France, aged 19, was the younger son of Mr. and Mrs. Ernest Eyres, Orchard Lea, Bath.

Lieut. RALPH IMRAY KIRTON, R.A.F. ("Peggy," "Curley"), who died on November 22nd at the Cambridge Hospital, Aldershot, as the result of a flying accident, aged 23, was the elder son of Dr. and Mrs. Charles Imray Kirton, Ashville, Honor Oak, S.E.

Lieut. ALFRED GEORGE BATHURST NORMAN, R.A.F., who was accidentally killed on November 20th, was the eldest son of the Rev. Harry Bathurst Norman, of 10, Palmeira Square, Hove. He was born on November 29th, 1898, educated at the Wick School, Hove, and Harrow (The Park). He joined the R.F.C. early in 1917, and had a good deal of experience in England, flying many different types of machines. Last June, after a course in night-flying and bombing at Salisbury, he joined the Independent Force in France. He was in Paris on duty at the time of the Armistice celebrations. He crashed in a fog near Amiens, and was killed instantaneously. He was the author of a volume of poems, entitled "Ditchling Beacon," which was published last March by Messrs. Sidgwick and Jackson.

Lieut. HARRY M. SOLOMAN, R.A.F., who died of influenza on December 5th in hospital at Cambridge, aged 25, was the youngest son of Nat Soloman and the late Mrs. Soloman, of Aldershot.

ROBERT VICTOR VALLANCEY, R.A.F., who died abroad on November 18th, of broncho-pneumonia, aged 18, was the second son of Mr. and Mrs. Charles George Vallancey, "Mont-aure," Chandos Road, Cricklewood, N.W. 2.



An Anglo-Chilean Gift

ON December 3rd, Lord Weir opened the Anglo-Chilean Hospital for officers of the R.A.F., at 6, Grosvenor Square, W., which the Chilean Minister, who presided, explained had been provided by a few Chileans residing in Great Britain and Britons connected with Chile, who wished to show the strength of the friendship uniting the two countries.

Lord Weir, in accepting that magnificent hospital on behalf of the Royal Air Force, tendered his heartfelt thanks for the gift. The gift was none the less welcome now that

Married

Capt. REYNELL OWEN CROMWELL BUSH, R. Dublin Fus. and R.A.F., eldest surviving son of the Rev. H. Cromwell Bush, Vicar of Seend, Wilts, was married on November 27th at St. Barnabas', Pimlico, to MARY ELEANOR, only daughter of Mr. H. J. MARSTON, of Rock Ferry, Cheshire.

Major R. GRAHAM, D.S.O., D.S.C., R.A.F., was married on November 30th at Rushall Church, to PHYLLIS (NANCY), only daughter of Henry E. FARMER, of Rushall Hall, Walsall.

Lieut. CHARLES KENYON, Gordon Highlanders, attached R.A.F., was married on September 2nd, at the Catholic Church, Denistoun, to MARION NORAH DAPHNE, youngest daughter of Col. HUGH CLUTTERBUCK, of Dicketts, Corsham.

Major EDWARD THOMAS NEWTON-CLARE, D.S.O., R.A.F., eldest son of the late Edward Shackfield Newton-Clare, M.R.C.S., Calne, Wilts, and of Mrs. Haworth, The Ferns, Beckenham, Kent, was married on December 3rd at the Parish Church, Aylesbury, to AILEEN YVONNE MARIANNE SWANN, A.R.R.C., elder daughter of Major-Gen. Swann, C.B., of Hartwell, Bucks.

WILLIAM CHARLES HADDON WEBB, Can. F.A. and R.A.F., was married on December 2nd, at Christ Church, Woking, to LINDA ALETHA SETON, elder daughter of Major A. St. John Seton, King's Liverpool Regt.

To be Married

The engagement is announced between Lieut. AUSTIN G. HEWER, medical officer, R.A.F., elder son of Mr. and Mrs. Austin Hower, of Burford, Oxfordshire, and EDITH, youngest daughter of Mr. William LANGMAN, J.P., C.A., and of Mrs. Langman, of Broadlands, Snaresbrook, Essex.

The engagement is announced between Lieut. RAPHAEL CHEVALLIER PRESTON, R.E., attd. R.A.F., son of the late Capt. John Preston, R.M., of Athlone, Co. Westmeath, and Mrs. Preston, of Kew Gardens, and Aspoll Hall, Suffolk, and MARGARET, elder daughter of SIDNEY H. WELLS, Director-General of Technical Education, Egypt.

The engagement is announced of Lieut. A. H. RAYNER, R.F.C., youngest son of Mr. G. G. Rayner, Croydon, to MARY JOYCE WOOD, R.A.F., M.T., only daughter of the Rev. Hugh and Mrs. Wood, of Whitchurch, Aylesbury.

The engagement is announced of Capt. MAURICE STEPHENS, R.A.F. (late R.N.A.S.), youngest son of Mr. J. Stephens, Toronto, Canada, to MARJORIE, younger daughter of Mr. ALEXANDER FINN, late H.B.M. Consul-General for Chile, South America, and Mrs. Finn, 2, Park Road, Richmond, Surrey.

The engagement is announced between Capt. M. VYVYAN, M.C., R.G.A. and R.A.F., youngest son of Capt. and Mrs. H. N. Vyvyan, of Ennis Vean, Penarth, and Ruan Minor, Cornwall, and FAIRY, youngest daughter of Col. and Mrs. JOHN BIRRELL, Allander House, Milngavie, and of Croftbank, Crail, Fife.

Items

Any information concerning Lieut. N. G. STRANSOM, R.A.F., will be gratefully received by his brother, Mr. G. Stransom, "Sackville," Hounslow, London. He was reported missing (on Bristol fighter No. B 1299, with Pte. C. V. Taylor (F/21701 Pte. 1) as observer) from May 10th, 1918, having last been seen to flatten out after a spin during a fight with eight Fokker triplanes. Both have been reported by the Germans to have died after having been brought down in flames.

Miss WARNER, of Thorp Arch, Boston Spa, Yorks, will be extremely grateful for any information concerning her brother, Lieut. J. W. Warner, R.A.F., who was reported missing on October 4th, 1918, and is now reported killed in action. He was last seen fighting three Fokker biplanes.

they were freed from the horrors of war. The R.A.F. had never at any time had too much hospital accommodation. Lord Weir added an eloquent tribute to the vast and beneficent work which, on all lands and on all seas, had been performed in the name of humanity under the Red Cross flag; also to the staff of surgeons and physicians who had placed their services voluntarily at the disposal of the committee. The officers of the R.A.F. were worthy of the very best which could be given to them. Their spirit, courage, chivalry, and self-sacrifice had been a matter for wonder, and were our constant pride.

THE ROYAL AIR FORCE

The following temp. appointments are made at the Air Ministry:—

London Gazette, December 3rd.
Staff Officers, 3rd Class.—Capt. W. E. G. Bryant; Oct. 9th. Lieut. (Actg. Capt.) H. F. Walker, and to retain the actg. rank of Capt. while so employed; Nov. 1st. Capt. A. E. Hartley; Nov. 11th.
Staff Officer, 4th Class.—Lieut. W. G. Knight; Oct. 14th.
 The following temp. appointments are made:—
Brigadier-General (P.).—Lieut.-Col. (Actg. Brig.-Gen.) B. C. Fellows, and to retain the actg. rank of Brig.-Gen. whilst so employed; Nov. 25th.
Staff Officer, 3rd Class.—(Q.)—Sec. Lieut. H. W. Brooks, and to be actg. Capt. while so employed; Oct. 12th.

Flying Branch.

Cpts. to be graded for pay as Cpts. while employed as Cpts. (K.B.):—
 E. G. Cleverly; Sept. 24th. C. W. Spencer; Nov. 18th.
 Lieut. (Actg. Capt.) I. H. P. McEwen retains the actg. rank of Capt. while employed as Capt. (A.), from (S.O.); Oct. 26th.
 Lieuts. to be Actg. Cpts. while employed as Cpts. (A.):—K. B. Forster; Oct. 27th. C. McEwen, M.C., D.F.C.; Oct. 28th. L. de S. Duke; Nov. 3rd.
 Lieuts. to be Actg. Cpts. while employed as Cpts. (K.B.):—L. Balfour, S. H. Gudin, R. G. W. Martin; Nov. 18th.
 Sec. Lieut. O. Gibb to be Actg. Capt. while employed as Capt. (O.); Oct. 29th.
 Capt. C. H. B. Readman reverts to Lieut. (A.) at his own request; Nov. 29th.

Sec. Lieut. (Actg. Lieut.) G. K. Cathles retains the actg. rank of Lieut. while employed as Lieut. (O.), from (T.); Aug. 7th.

The following Flight Cadets are granted temp. commissions as Sec. Lieuts. (A.):—11073 H. E. Peto; Aug. 17th. O. J. Demers; Sept. 19th. 618102 S. T. Mercalfe; Oct. 9th. 240232 W. McL. Hiron; Oct. 10th. 115127 L. G. C. Perryer, 110208 G. P. Macdonald; Oct. 12th. 40250 D. C. Hurworth, 2491 H. F. Rouse; Oct. 14th. 13591 C. S. Wolton, 201354 W. J. Tucker, 240095 J. Paterson, D.C.M., 179121 E. J. Addison, 179126 L. W. J. Lawson; Oct. 16th. 150541 F. Johnson; Nov. 6th. 137100 M. Rock; Nov. 10th. 100429 F. G. Moore, 401439 M. E. Smith, 552473 C. H. A. Godfrey, 158157 E. M. Hook, 132381 C. E. Faulkner, 104909 H. M. Turner, 177429 G. W. Brown; Nov. 13th. 31211 E. Groves, 115790 W. B. Crealock; Nov. 14th. 74439 F. G. New, 128274 C. H. Baker, 53027 V. A. Cresner, 29038 C. Burnett, 37712 W. Anderson, 154816 H. W. Spencer, 02097 E. A. Kemp, 153800 W. C. Jakes; Nov. 15th. 42291 L. W. Gare, 117240 J. G. Wynne-Williams, 424 F. C. Phillips, 9782 S. C. Taylor; Nov. 16th. 1087949 B. H. C. Russell, 8/1611 F. T. Edwards, 100272 E. Robinson, 153201 A. D. McLean, 245440 E. H. Cooper, 45140 H. G. Haydon; Nov. 17th. 154167 R. H. Palmer, 154797 N. S. Morrison, 175927 R. F. Hammond, 54993 A. E. Cohen, 110059 W. O. A. Young, 95615 L. H. Starkey; Nov. 18th. 96514 T. V. Thresh; Nov. 19th.

The following Cadets are granted temp. commissions as Sec. Lieuts. (A.):—
 A. O. Adams, J. W. Aikenhead, W. M. Atkin, J. E. Beolchi, D. J. Brebber, R. E. Brown, W. N. Cunningham, De W. C. Derby, H. C. W. Dobbin, N. Duncan, W. S. Durkin, J. W. Eastman, W. J. Eastman, W. Ehmke, E. H. Elliott, C. R. Gard, F. L. Graisley, G. H. Hill, J. B. Hoag, Jun., W. W. Hough, E. H. Jones, C. R. Knowles, J. A. Lane, M. La F. Lawrence, G. E. Lloyd, A. R. Mark, W. K. Lees; Oct. 17th.

Sec. Lieut. J. G. M. Mathewson (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut. (A. and S.); June 2nd. Substituted for notification concerning G. Mathewson in *Gazette* July 23rd.

The following Flight Cadets are granted temp. commissions as Sec. Lieuts. (A. and S.):—128225 J. F. Strugnell; Aug. 3rd. S. J. Chiddenton; Sept. 28th. 175477 M. McDonough, 175479 A. E. Mercer, 175480 E. H. J. Miller, 175483 I. E. Rawnsley, 175487 E. W. Reeves, 175486 W. G. Rich, 175484 R. L. Ronaldson, 175482 J. E. Royds, 175485 H. L. White, 175475 N. R. Lightbody; Oct. 25th. 117187 O. T. Hazell; Nov. 15th.

The following Flight Cadets are granted temp. commissions as Sec. Lieuts. (Observer Officers):—110895 A. H. Taylor; Oct. 1st. 84/070754 W. F. Lane; Oct. 9th. 10640 J. E. Truss; Oct. 12th.

50943 Flight Cadet F. Eppinger is granted a temp. commission as Sec. Lieut. (S.); Oct. 19th.

The following Lieuts. relinquish their commissions on account of ill-health, and are granted the hon. rank of Lieut.:—A. Baillie, S. V. Langton, A. E. Muncester (contracted on active service); Dec. 4th.

Lieut. F. Whitehead (Lieut., D. of Lan. Yeo., T.F.) relinquishes his commission on account of ill-health; Dec. 4th.

Sec. Lieut. J. A. Griffin relinquishes his commission, being physically unsuited for the duties of Pilot or Observer; Dec. 4th.

The date of appointment of Sec. Lieut. J. W. Frechette is April 3rd, and not as in *Gazette*, May 31st.

The date of appointment of Sec. Lieut. R. H. Regan is July 3rd, and not as in *Gazette*, Sept. 20th.

The date of appointment of Sec. Lieut. G. Goad is July 19th, and not as in *Gazette*, Sept. 24th.

The Christian names of 184944 Flight Cadet Gideon Johannes Malherbe are as now described, and not as in *Gazette*, Nov. 26th.

The Christian names of 184968 Flight Cadet Daniel Johannes Roos are as now described, and not as in *Gazette*, Nov. 26th.

The names of 184952 Flight Cadet Edward Wilfrid Tyler Meeser are as now described, and not as in *Gazette*, Nov. 26th.

The Christian names of 184929 Francois Nicolaas Joubert are as now described, and not as in *Gazette*, Nov. 26th.

The notification in *Gazette* Aug. 27th concerning Sec. Lieut. W. E. Hunt is cancelled.

The notifications in *Gazette* Oct. 1st and Oct. 18th concerning Flight Cadet Arthur Henry Taylor are cancelled.

Administrative Branch.

Maj. N. C. Sampson to be Maj., from (A.); Nov. 27th.
 Capt. E. B. Broughton to be Capt., from (K.B.); Nov. 18th.
 Capt. H. H. Clarke (R. Welsh Fus.) is granted a temp. commission as Capt.; May 12th, seniority April 1st.
 Capt. J. B. Cussen to be Lieut., from (A.); Oct. 15th.
 Lieuts. (A.) to be Lieuts.:—Hon. M. Greville; Nov. 2nd. W. H. McGee; Nov. 7th.
 Lieuts. (K.B.) to be Lieuts.:—W. A. J. Cribble; Nov. 12th. J. L. Carvel; Nov. 19th.
 Lieuts. (O.) to be Lieuts.:—K. L. Bulkley; Sept. 19th. W. Nuttall; Nov. 1st.
 Lieut. A. A. M. Weir to be Lieut., from (T.); Sept. 23rd.
 The following are granted temp. commissions as Lieuts., seniority April

1st:—H. B. Sheppard (Lieut., N. Lanc. R.); May 22nd. E. H. A. Lockwood (Temp. Lieut., Worc. R.); Sept. 19th. G. H. Martin (Lieut., Norf. R.); Oct. 28th. C. L. Hancock (Lieut., Leic. R.); Oct. 29th. H. B. Stutfield (Temp. Lieut., Gen. List); Nov. 23rd. L. P. Bolton, M.C. (Temp. Lieut., N. Lanc. R.) is granted a temp. commission as Lieut.; Oct. 9th.

Sec. Lieuts. to be Actg. Lieuts. whilst employed as Lieuts.:—G. F. Peirson; Sept. 22nd. E. Bell; Oct. 4th. H. Bradshaw; Oct. 12th. C. B. Charlewood, R. L. Raymond; Oct. 21st. E. S. de Pass; Oct. 22nd. W. Smith; Nov. 6th. J. H. E. Weekes; Nov. 11th. (Hon. Lieut.) A. C. S. Buist, M.C., from (A.); Nov. 22nd.

G. M. M. Clune (Temp. Sec. Lieut., Lab. Corps) is granted a temp. commission as Sec. Lieut.; Oct. 19th, seniority April 1st, and to be Actg. Lieut. while employed as Lieut.

The following are granted temp. commissions as Sec. Lieuts., and to be Actg. Lieuts. while specially employed:—R. Parker; Aug. 12th. L. N. Sargeant; Nov. 4th. J. McCarthy; Nov. 27th.

The following are granted temp. commissions as Sec. Lieuts.:—S. Thomas; Oct. 17th. W. D. Oewin; Nov. 21st.

The following Sec. Lieuts. relinquish their commissions on account of ill-health, and are granted hon. rank of Sec. Lieut.:—W. N. Clements; April 24th. N. A. Dickinson, J. L. King, E. H. Newson, W. H. Ottewell, S. B. Standen; Dec. 4th.

Date of appointment of Sec. Lieut. W. S. Leeming is Sept. 1st, and not as in *Gazette* Nov. 5th.

Notification in *Gazette* Sept. 20th concerning Maj. A. N. Stuart is cancelled.

Notification in *Gazette* Oct. 25th concerning Lieut. (Actg. Capt.) F. C. Staines is cancelled.

Technical Branch.

W. R. Baldwin-Wiseman (Capt., T.F. Res.) is granted a temp. commission as Capt.; Aug. 19th, seniority April 1st.

Lieut. F. A. N. Haultain to be Actg. Capt. (Grade A) while employed as Capt., from (O.); Nov. 3rd.

R. B. Stephenson (Sec. Lieut., R.E.) is granted a temp. commission as Sec. Lieut. (Sept. 19th, seniority April 1st), and to be Actg. Capt. while employed as Capt.

E. C. Harris (Lieut., R.E.) is granted a temp. commission as Lieut.; Oct. 16th, seniority April 1st.

Lieuts. (A.) to be Lieuts. (Grade A):—W. L. P. Gould; Oct. 10th. C. B. M. Dale, C. L. Whitburn; Oct. 22nd. F. M. Miller; Nov. 20th.

Lieuts. (O.) to be Lieuts. (Grade A):—L. G. Martin; Aug. 30th. R. M. Pegg; Oct. 1st (substituted for notification in *Gazette* Nov. 19th); R. Rutherford; Nov. 5th.

W. R. Bernard (late Comdr., R.N., Ret.) is granted a temp. commission as Lieut. (Grade A) (Sept. 9th), and to be Hon. Maj. (substituted for notification in *Gazette* Sept. 13th).

Sec. Lieut. (Hon. Lieut.) G. W. Howland to be Sec. Lieut. (Hon. Lieut.) from (A. and S.); May 12th.

H. A. Newman (Lieut., R.E.) is granted a temp. commission as Sec. Lieut.; Oct. 14th, seniority April 1st, and to be Hon. Lieut.

The following are granted temp. commissions as Sec. Lieuts. (Grade A):—
 D. Dougall, G. Forster, J. France, M. W. Tomlinson, N. B. D. W. Wood, C. E. Bugg, A. W. Edwards, P. J. Moyes, N. Newbury, A. J. Salmond, T. J. Williams, E. Lancaster, C. H. Kendall, J. Faux; Nov. 21st.

Sec. Lieuts. (Ad.) to be Sec. Lieuts. (Grade B):—F. Bunting, H. W. Levy, C. R. Cunningham, A. Gall, W. Wood, C. A. Broadhurst, E. J. Cook, V. A. F. Whitehead; Nov. 21st.

The following are granted temp. commissions as Sec. Lieuts. (Grade B):—
 N. Dainty, G. G. Creusen, J. N. Duthoit, H. A. J. Edgley, W. S. Harman, S. E. Hodgson, G. W. Martin, W. Pickard, T. H. Price, H. G. Williams, L. Palgrave, S. W. Rolfe, A. S. Davies, W. A. Frame, T. E. Lomas, A. C. Middlemas, H. Wilkes, W. A. Kyte, O. Loynes, H. J. Keay, N. B. Brown, G. McC. Cherry, J. P. Clews, H. L. Cooper, H. Cue, R. G. Hogg, L. Hawes, H. H. Hawkins, H. Philp, E. Long, F. A. Ashby, J. Stevenson, J. Stewart, F. Robins, C. Jackson; Nov. 21st.

Maj. C. K. Butler-Stoney relinquishes his commission on account of ill-health, and is granted the hon. rank of Maj.; Dec. 4th.

The date of appointment of Capt. C. Barrington is July 29th, and not as in *Gazette* Nov. 15th.

The notification in *Gazette* April 30th concerning Actg. Capt. D. E. Pye is cancelled.

The notification in *Gazette* May 21st concerning Lieut. J. H. Jennings is cancelled.

Medical Branch.

H. B. Porteous (late Capt., R.A.M.C., T.F.) is granted a temp. commission as Capt., and to be Actg. Maj. while specially employed; Oct. 21st.

The following are granted temp. commissions as Lieuts.:—V. I. Levy; Nov. 1st. C. C. Rowland; Nov. 26th. P. McDiarmid; Nov. 30th. A. Watson, H. J. Swan; Dec. 2nd (substituted for notification in *Gazette* Nov. 22nd).

Dental Branch.

Lieut. F. B. Stradling to be Lieut.—from (T.); Oct. 30th.

Chaplains' Branch.

The following are granted temp. commissions as Chaplains with the relative rank of Cpts.:—Rev. J. H. Bentley, Rev. N. L. Bicknell, Rev. J. D. Bolton (late Temp. Chaplain to the Forces, 4th Class, A.C.D.), Rev. W. G. Carpenter, Rev. C. B. How, Rev. P. G. Levy (late Temp. Chaplain to the Forces, 4th Class, A.C.D.), Rev. J. H. P. Still (late Temp. Chaplain to the Forces, 4th Class, A.C.D.); Nov. 29th.

Rev. G. A. Davies (late Temp. Chaplain to the Forces, 4th Class, A.C.D.); Nov. 30th.

Memoranda.

W. W. Hardwick (Eng.-Capt., R.N., Ret.) is granted the hon. rank of Lieut.-Col.; Dec. 3rd.

Capt. F. B. Binney to be Hon. Maj.

Sec. Lieut. A. Cumming to be Hon. Capt.

H. H. Lewis is granted a temp. hon. commission as Lieut. while employed as Asst. Inspector, A.I.D.; Nov. 26th.

London Gazette, December 6th.

The following temporary appointments are made at the Air Ministry:—
Deputy Master-General of Personnel.—Col. (actg. Brig.-Gen.) F. L. Festing, C.M.G., and to retain the actg. rank of Brig.-Gen. whilst so employed, vice Lieut.-Col. (actg. Brig.-Gen.) G. Livingston, C.M.G., who relinquishes the actg. rank of Brig.-Gen.; Nov. 25th.

Director of Air Personnel Services.—Lieut.-Col. (actg. Col.) R. H. More, C.M.G., and to be actg. Brig.-Gen. whilst so employed; Nov. 25th.

Staff Officer, 2nd Class.—Lieut. (actg. Capt.) F. M. Iredale, and to be actg. Maj. whilst so employed; Nov. 1st.

Staff Officers, 3rd Class.—And to be actg. Capt. whilst so employed, if not already holding that rank:—Capt. W. R. Baldwin-Wiseman, Sec. Lieut. (Hon. Lieut.) C. M. Hennell, Sec. Lieut. A. Holmes; Nov. 18th.

The following temp. appointments are made:—

Staff Officer, 1st Class.—Capt. (actg. Maj.) H. St. C. Smallwood, and to be actg. Lieut.-Col. whilst so employed, vice Lieut.-Col. L. Jenkins, D.S.O., M.C.; Nov. 23rd.

Staff Officer, 3rd Class (Q.).—Sec. Lieut. (Hon. Lieut.) J. G. Dyson, and to be actg. Capt. whilst so employed; Oct. 12th.

Flying Branch.

Maj. A. G. R. Garrod, M.C., to be actg. Lieut.-Col. while employed as Lieut.-Col. (A.); Nov. 11th.

Maj. (actg. Lieut.-Col.) B. L. Huskisson, D.S.C., to be Maj. (A.), and to relinquish the actg. rank of Lieut.-Col.; Nov. 20th.

Capt. A. P. D. Hill to be actg. Maj. while employed as Maj. (A.); Nov. 11th.

Capt. F. L. C. Butcher to be actg. Maj. while employed as Maj. (A'ship); Nov. 12th.

Lieut. F. B. Brant to be actg. Capt. while employed as Capt. (A.) from (T.); Nov. 19th.

Lieut. R. G. Young to be Lieut. (A.), from (Ad.); Dec. 2nd.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (A.):—920027 J. E. Dionne; Aug. 13th. 41822 C. R. C. Pink; Aug. 24th. 270561 A. Laskey, 96036 W. H. Styles, 50839 E. L. Fuller, 40370 A. Home-wood, 5645 S. J. Brain; Aug. 28th. 200236 F. C. Spencer, S/7453 E. H. Fry, 355251 H. W. Iles, 40179 C. T. Packham, 260189 A. S. Vaughan; Aug. 20th. 40934 G. A. Willcox; Aug. 30th. 260219 H. H. Jackson, 94823 W. N. Jackson, 735150 F. W. Riley, 260693 R. C. Cary; Aug. 31st. 110910 N. M. Harrison; Sept. 6th. 260360 J. F. White, Z/374 H. F. Harper, 260310 C. E. Fabian; Sept. 7th. 270070 A. T. Wood, 533028 H. J. Gambing, 4353 C. O. Hinks; Sept. 9th. 200142 W. A. Warman; Sept. 10th. 110843 J. G. Barrett, 625093 J. V. Edwards; Sept. 11th. 110783 H. S. Hopkins, 618293 H. F. Grannell, 730964 P. W. Evans, 265328 F. B. Brutnell; Sept. 12th. 624376 O. G. Meredith, 320925 E. A. Bateman, 345141 W. Williams; Sept. 13th. 735840 W. J. Ramsbottom, 200652 J. H. Damon, 1208 G. P. Mitchell, 40059 E. C. Tasker, S/2/018236 G. W. Curry, 06400 W. T. K. Wallington, 260212 W. R. H. Robinson, 200010 J. Rae; Sept. 14th. 280515 R. J. Moysie, 56129 P. D. Fenton; Sept. 15th. 880341 A. E. Bedborough; Sept. 16th. 240253 W. G. A. Freke, 316003 A. Anderson; Sept. 18th. 202957 H. M. Fletcher, 7865 S. T. Marshall, S/7670 J. W. P. Cartwright, 6275 J. S. Smith; Sept. 20th. 137984 A. P. K. Hattersley; Sept. 21st. 2/271 J. J. Antoncich; Sept. 22nd. 57106 C. F. Stevenon; Sept. 24th. 50481 J. Jones, 101325 G. E. Ellams, 265744 J. J. Marks; Sept. 25th. 100155 H. Frow, 2169 F. Dorsey, 1944 J. E. Hunt, 50782 H. H. Salmon, 320281 A. L. Farmer, 502469 R. H. Ford, 240181 L. H. Fray, 270099 L. J. Swann, 624192 R. C. Taylor; Sept. 26th. 137973 L. Buckley-Bridge, T/4/237489 E. G. Marchant; Sept. 27th. T/232862 J. John; Sept. 28th. 100228 W. Graham, 56182 W. R. Hatfield; Sept. 29th. 554832 L. C. Le Maitre, 270595 T. Wallis, M2/204956 T. T. Laker, 106116 J. W. Craig, 201137 R. J. Folland, 528563 W. E. Johnson, Z/247 F. Krockel, 94791 G. S. Johnston; Sept. 30th. 137997 F. N. Quay; Oct. 1st.

T. Dowsett is granted a temp. commn. as Sec. Lieut. (A.); Oct. 5th.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (K.B.):—L/11036 E. Young, 1275 L. G. Howard, 705739 J. A. Neill, 265193 H. P. E. Jones, 11133 J. C. Preston; May 25th. 36525 B. D. Bolas, 403846 C. Watkins, M2/106013 L. A. Gray, 20217 A. G. Renecke, 9449 J. W. Haynes; July 27th.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (Obs. Officers):—184940 C. F. Lawson, 184972 W. E. Schock; Aug. 2nd. 403590 C. G. H. C. Thomas; Aug. 25th. 538256 S. V. Spiller, 260086 R. E. Norris; Aug. 28th. 240625 R. T. Rich, 14516, F. G. Carter, T/4/056656 H. A. Fourte, 35348 A. S. Robinson, 11832 I. Fender, 355482 W. Wright, 528732 R. E. Hudson, 203453 H. Milward, 28834 E. Maloney; Aug. 31st. 184956 W. H. Oldfield, 200652, F. L. S. Dennett; Sept. 1st. 845 G. B. Hopwood, 32281 W. Robinson, 28078 G. Winstanley, 320252 G. Godley, 9260 H. Hall, 280132 G. Hill; Sept. 7th. 50901 L. F. Bromwich, 404005 C. H. Phillips, 10148 W. S. Swann, 137998 O. R. Schoonraad, 200383 J. C. Dunbar; Sept. 14th. 290855 F. Skelley, DM2/228808 W. C. Allardye; Sept. 21st. 37053 G. T. Williams; Sept. 25th.

The following relinquish their commns. on ceasing to be employed:—Sec. Lieut. D. G. Porter (Sec. Lieut., R.F.A., T.F.); Aug. 6th. Sec. Lieut. R. H. Shepherd (Sec. Lieut., Suff. R.); Nov. 16th. Capt. L. W. Hopkins (Capt., E. Ont. R.); Nov. 18th. Lieut. J. A. Fitz-Herbert, M.C. (Lieut., R.G.A., S.R.); Nov. 20th.

The following Capt. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Capt.:—C. F. M. Chambers, D.S.O., H. G. Holden, D.S.C.; Dec. 7th.

The following Lieuts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Lieut.:—L. A. W. Clift, F. Green, J. E. Ostler, G. H. R. Price (caused by wounds), H. E. Rachar; Dec. 7th.

The following Lieuts. relinquish their commns. on account of ill-health:—(Hon. Capt.) S. E. Goodwin (Capt., L'pool R., T.F.) (contracted on active service), G. Hackett (Army Cyclists Corps); Dec. 7th.

Sec. Lieut. G. R. Klinck relinquishes his commn. on account of ill-health, and is granted the hon. rank of Sec. Lieut.; Dec. 7th.

The surname of Sec. Lieut. C. Walter is as now described, and not Walker as stated in *Gazette*, June 14th.

The Christian names of Sec. Lieut. Cecil Denis Davidson are as now described, and not as stated in *Gazette* Oct. 11th.

The notifications in *Gazette*, Oct. 8th, concerning the following Sec. Lieuts. are cancelled:—H. J. Philp, M. J. Moffatt, C. V. Duncan.

The notification in *Gazette* Nov. 1st concerning Sec. Lieut. G. Dignam is cancelled.

Administrative Branch.

W. F. Routley (Temp. Capt., Manch. R.) is granted a temp. commn. as Capt.; July 2nd, seniority April 1st, and to be actg. Maj. whilst employed as Maj.

Capt. F. R. Freeman to be Capt., from (S.O.); Sept. 15th.

J. A. Bonnyman (Lieut., Welsh R.) is granted a temp. commn. as Lieut.; Oct. 21st (seniority April 1st, and to be actg. Capt. whilst employed as Capt.).

Lieuts. (A.) to be Lieuts.:—D. A. Wright; Sept. 17th. T. E. Carley; Nov. 12th. H. C. Marr; Nov. 20th.

Lieut. D. H. Thomas to be Lieut., from (O.); Oct. 15th.

The following are granted temp. commns. as Lieuts., with seniority April 1st:—P. H. Budds (Temp. Lieut., E. Kent R.); Aug. 21st. A. A. Watson (Lieut., R.F.A.); Nov. 4th.

Sec. Lieut. W. J. Terry to be actg. Lieut. while employed as Lieut.; Nov. 5th.

The following are granted temp. commns. as Sec. Lieuts., and to be actg. Lieuts. while specially employed:—R. Needham; Nov. 15th. J. G. Ramsey; Nov. 20th. G. W. Webb is granted a temp. commn. as Sec. Lieut.; Nov. 11th.

The following relinquish their commns. on ceasing to be employed:—Lieut. (actg. Capt.) G. H. Puckle (Lieut., I.A.R.O.); Oct. 2nd. Lieut. T. A. W. Foy (Lieut., R.E.); Nov. 11th.

Lieut. C. Clarke relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lieut.; Dec. 7th.

The following Sec. Lieuts. relinquish their commns. on account of ill-health and are granted the hon. rank of Sec. Lieut.:—L. Y. Erskine, R. J. S. F. Sparks, J. Tyllyer, J. A. Whalley (contracted on active service); Dec. 7th.

Sec. Lieut. S. C. Francis resigns his commn.; Dec. 7th.

The surname of Lieut. (actg. Capt.) W. L. Collins is as now described, and not Collis, as in *Gazette* Nov. 8th.

The surname of Lieut. N. S. Wolfendale is as now described, and not as in *Gazette* Oct. 15th.

The notification in *Gazette*, Aug. 27th, concerning Sec. Lieut. (actg. Lieut.) H. P. Souther is cancelled.

The notification in *Gazette*, Sept. 17th, concerning Lieut. A. Watson is cancelled.

The notification in *Gazette*, Nov. 26th, concerning Lieut. E. W. Keep, is cancelled.

Technical Branch.

Maj. A. Cleghorn to be actg. Lieut.-Col. while employed as Lieut.-Col.; Nov. 15th.

Lieut. (actg. Capt.) H. G. Gibbs to be actg. Maj. while employed as Maj. (Grade B); July 26th.

Lieut. (actg. Capt.) C. W. Jamieson retains the actg. rank of Capt. while employed as Capt. (Grade A), from (Ad.); Oct. 4th (substituted for notification in *Gazette* Nov. 22nd).

L. H. M. Bennett is granted a temp. commn. as Capt. (Grade A); July 24th.

R. E. Threlfall (Lieut., R.E.) is granted a temp. commn. as Lieut.; Sept. 14th, seniority April 1st.

G. R. Hogg (Sec. Lieut., R.E.) is granted a temp. commn. as Sec. Lieut. (Grade A); June 21st, seniority April 1st, and to be actg. Lieut. while employed as Lieut.

Sec. Lieut. H. R. Soutter to be actg. Lieut. while employed as Lieut. (Grade B); Aug. 18th.

Sec. Lieut. F. J. Lyons-Davies (Sec. Lieut., R.E., T.F.) relinquishes his commn. on ceasing to be employed; Nov. 13th.

Capt. W. A. R. M. McKee (Capt., R. Scots) relinquishes his commn. at his own request; Nov. 30th.

Sec. Lieut. (Hon. Lieut.) E. A. Roberts relinquishes his commn. on account of ill health contracted on active service, and is granted the hon. rank of Lieut.; Dec. 7th.

Sec. Lieut. (Hon. Lieut.) H. Shackell (Lieut., Midd'x R., T.F.) relinquishes his commn. on account of ill-health caused by wounds; Dec. 7th.

Chaplains' Branch.

The following are granted temp. commns. as Chaplains with the relative rank of Capt.:—Rev. J. Shelly; Dec. 2nd. Rev. G. B. Allen (late Temp. Chaplain to the Forces, 4th Class, A.C.D.); Dec. 3rd. Rev. K. B. Somerville; Dec. 4th.

Memoranda.

Capt. J. H. Cotton to be actg. Maj. whilst holding a special appointment at the Ministry of Munitions; Nov. 1st.

To be actg. Capt. while holding special appointments at the Ministry of Munitions:—Sec. Lieut. (Hon. Lieut.) D. M. Mackie; Nov. 4th. Lieut. J. H. F. Pilling; Nov. 5th.

The following relinquish their commns. on ceasing to be employed:—Sec. Lieut. E. A. R. Fowles; Aug. 31st. Capt. E. L. D. Bartley (Lieut., R.N.); Nov. 23rd.

Royal Flying Corps (Military Wing)

London Gazette Supplement, December 5th.

Flying Officers (Observers).—Lieut. C. Jackson, R. W. Fus., T.F., and to be sec'd; Dec. 10th, 1917. Lieut. R. T. Robbins, Linc. R. (T.F.), and to be sec'd; Dec. 23rd, 1917. Temp. Sec. Lieuts. (on prob.), Gen. List, and to be confirmed in their rank:—F. W. Sriver; March 12th. M. Fearman; March 30th.

Adjutant.—Sec. Lieut. W. C. Clark, from an Equipment Officer, 3rd Class and to be Temp. Capt. (with pay and allowances as Lieut.) while so employed; March 1st.

Schools of Instruction.—Schools of Military Aeronautics.

Assistant Instructor.—(Graded as an Equipment Officer, 2nd Class).—Temp. Sec. Lieut. W. Dawson, Gen. List, from an Assistant Instructor (graded as an Equipment Officer, 3rd Class), and to be Temp. Lieut. while so employed; Feb. 25th.

Police Work in Air Raids

SIR JOHN DICKINSON, at Bow Street Police Court, on Saturday, presented Inspector Harding, Sub-Divisional Inspector Hamilton, Station Police-Sergeant Jackson, and Station Police-Sergeant Gaine each with £10, and Police-constables Maisey and Trindes with £8 each from the Reward Fund in recognition of their praiseworthy action on the occasion of an air raid.

On the night of May 19th, 1918, a bomb dropped by enemy aircraft fell in Seventh Avenue, Manor Park, E., completely demolishing two houses, and damaging three others nearby. Inspector Hamilton and Sergeant Gaine, assisted by

private persons, succeeded in rescuing six persons from the damaged property. Constables Maisey and Trindes displayed exceptional devotion to duty on the occasion of this raid. While in charge of a large air raid shelter in Maryland Road, Stratford, Inspector Harding and Sergeant Jackson heard a bomb explode. In proceeding to locate the spot where it had fallen they discovered that the inspector's own residence was very badly damaged. Having ascertained that his wife and children were uninjured the inspector, with the sergeant, proceeded to the scene of the explosion and rescued four persons in circumstances of considerable danger.

SIDE-WINDS

If we ever get full details of the mechanical engineering achievements of this War, it will probably be surprising to many to see what a comparatively large part has been played by the Bowden wire mechanism. Nearly every War Department of Great Britain and the Allies found some use for it, and each year consumed many millions of feet of Bowden wire, together with the necessary operating parts.

A LINE from Messrs. Joseph Freeman, Sons and Co., Ltd., the well-known colour, varnish and paint firm of Garratt Lane, Wandsworth, S.W. 18, reminds us that they are again issuing a bold calendar—useful because you can see it when it is hung up. Those who wish to make sure of a copy should see that their application goes in as soon as possible.

A MOST amusing forecast of the humours of commercial aviation, from the pen of Mr. Douglas W. Thorburn, appears in the last issue of *Aircraft Supplies*. We should like to quote it in full, but we must be content with this excerpt:—

"We are already able to take tickets for an aerial journey from London to Paris. Imagine the day when some dear old soul, after being laboriously hauled on board a No. 9 'bus at Ludgate Circus, will say to the conductor: 'Is this right for Paris?'—to which he will reply: 'Yus, lady—change at the Ritz.'"

"Or we may overhear a conversation of this sort between two ladies one afternoon at Selfridge's: 'Oh, my dear, I'm awfully sorry to be so late—I do hope I haven't kept you waiting long! The fact is, I've been over to Stockholm this morning to lunch with the Neilssens, and George told me to take a De H. 10 at Marble Arch, and I made a mistake and got into a De H. 6, so of course I was awfully late and nearly missed lunch altogether!'"

"When the aerial traffic becomes really thick it is devoutly to be hoped the language of the pilots won't get thick also. (At present everyone knows it is all that could be desired.) It will indeed be lamentable if we have the pilot in charge of a Handley-Page crowded with passengers on their way home from the City to Inverness—or maybe Palestine—exclaiming to a passing sportsman in a smart single-seater: 'Nah, then! Can't yer see where yer a-comin' to with that there Snipe! Put a bit of left rudder on, blank, dash, etc., etc.! Some of you fellers wants all the blinkin' sky to yourselves! . . . What's that, miss—you wanted to get off at Birmingham, did yer? Well, why didn't yer say so sooner or ring the bell or somethink? We've just passed Newcastle. You'll 'ave to change at Perth and take a No. 80 Havro south.'"

IMPORTS AND EXPORTS, 1917-1918.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25th, 1912; for 1912 and 1913, see "FLIGHT" for January 17th, 1914; for 1914, see "FLIGHT" for January 15th, 1915; for 1915, see "FLIGHT" for January 13th, 1916; for 1916, see "FLIGHT" for January 11th, 1917; and for 1917, see "FLIGHT" for January 24th, 1918.

	Imports.		Exports.		Re-Exportation.	
	1917.	1918.	1917.	1918.	1917.	1918.
January ...	10,842	49,402	67,033	24,765	—	—
February ...	9,479	51,941	26,512	13,545	6	—
March ...	11,158	47,930	58,517	11,451	—	1,000
April ...	21,141	33,342	21,151	10,815	—	—
May ...	6,877	942,866	59,713	67,224	—	—
June ...	2,670	864,296	14,647	35,658	—	—
July ...	9,104	1,834,293	106,250	10,800	—	—
August ...	18,680	566,137	68,315	71,503	258	—
September ...	9,047	505,160	56,491	8,033	30	100
October ...	58,086	294,835	73,580	9,166	100	—
November ...	169,574	410,557	75,632	75,811	—	—
	326,658	5,600,759	627,841	338,771	394	1,100

PUBLICATIONS RECEIVED.

Over "Over There," By "Wing Adjutant." London: Cassell and Co., Ltd. Price 3s. 6d. net.

Guymer, Knight of the Air. By Henry Bordeaux. Translated from the French by L. M. Still. London: Chatto and Windus. Price 6s. net.

In the Air. By Lieut. Bert Hall. London: Hurst and Blackett, Ltd., Paternoster House, E.C. 4. Price 2s. 6d. net.

Cavalry of the Air. By "Flight Commander." London: Simpkin, Marshall, Hamilton, Kent and Co., Ltd. Price 6s. net.

LEGAL INTELLIGENCE

A Perjury Charge Dismissed

AT Guildhall on December 3rd, before Alderman Sir Alfred Bower, Robert Taylor appeared to an adjourned summons charging him with having committed perjury in an affidavit sworn in the High Court, and with having converted to his own use £5,000 entrusted to him for the purpose of paying Treasury dues on a proposed increase of capital in Associated Aircrafts, Ltd., of which company the defendant was a director. The complainant was P. Demetrius Baronnos, a Greek shipping agent formerly carrying on business in Antwerp. In cross-examination by Sir Richard Muir, for the defence, Mr. Baronnos stated that Mr. Taylor's debt to him had been purchased, and in consequence the defendant did not now owe him one penny. The Alderman said that the perjury charge would be dismissed, but he thought the other must go to the jury.

Sir Richard Muir: My contention is that as the first charge was founded on a misunderstanding of facts, the second was founded on a misconception of law. The £5,000 was a loan pure and simple.

Giving evidence, the defendant said that he did not use the money for his own purposes. He had a scheme on hand for the payment of his debts. The Alderman said that this materially affected the case, and the summons would be dismissed.

NEW COMPANIES REGISTERED.

LOGIE, ASHMOLE AND CO., LTD., 154, New Street, Burton-on-Trent. Capital £3,000, in £1 shares. Acquiring business of a mechanical and electrical engineer, etc., carried on by R. W. Logie, as "R. W. Logie and Co.," at New Street, Burton-on-Trent; also to carry on business as aeroplane manufacturers, etc. First directors:—R. W. Logie and J. W. Ashmole.

WING CLUB, LTD., Castle Buildings, Whittaker Avenue, Richmond, Surrey.—Capital £1,000, in £1 shares. Objects: To establish and maintain a club for those interested in aviation. First director: J. A. Whitehead (governing director of Whitehead Aircraft, 1918, Ltd.).

Aeronautical Patents Published

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motors.

APPLIED FOR IN 1917

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published December 12th, 1918.

- 16,378. H. LORD. Glands or fairleads, etc., used in aerostats, etc. (120,603.)
- 16,593. S. BOXELL. Propellers for aircraft. (120,612.)
- 16,763. J. T. CLARKE. Magnetic apparatus for indicating verticality and orientation. (120,625.)
- 16,824. P. F. CHAPLIN. Propellers for aircraft. (120,627.)

APPLIED FOR IN 1918

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

Published December 12th, 1918.

- 5,022. H. T. BRERETON. Aeroplane inclinometer. (120,694.)
- 5,587. WESTINGHOUSE ELECTRIC AND MANUFACTURING CO. Structural elements and parts for aeroplanes. (120,701.)

If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages cv, cvi, cvii and cviii).

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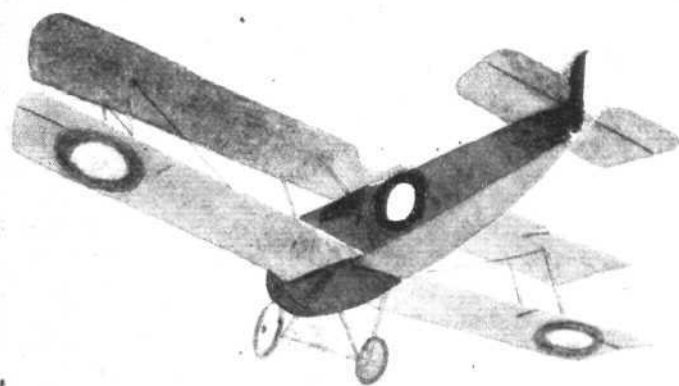
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Flighting's Christmas Greeting



1918

J.P.

The Clir-fighter's Bride or



Milly, the Munitionette

By
Miss Monica Devereux.

[At an unparalleled sacrifice we have arranged for Miss Monica Devereux, who received her literary training in the scullery of the Marchioness of Allspice, to write us this heart-founding slice of life. We hope readers will recoup us for the enormous expense involved by rolling up at their local picture palaces when the filmed version is produced.]



WELL played, Sir!" shrieked the toffee besmeared fags on the boundary line, wriggling ecstatically on one leg, as our hero cut a leg ball for five high above the aged school pavilion, with its mullioned dormer windows. Alan Vyvian, the cock of the school, stood nearly seven feet high in his shapely cricketing boots (size six), and with a shrewdly humorous blue eye, and dark close-curling locks, was recognised by all as a veritable Adonis, capable of fluttering the hearts in the maidenly bosoms of the fellows' sisters, who had deserted their ice-cream sodas to a woman to see this magnificent male knock smithereens out of the opposing team in their annual match with St. Griselda's. The game was won, and Alan, merrily hitting the umpire over the head with his discarded pads, returned to the cluster of admirers who waited to carry him shoulder high with the springy stride of a gazelle. It was July of the year 1914.

"Sub-Lieutenant Vyvian, Sir, reporting for duty!" "!!!!!! ??????????-----!!!!!!" replied the grizzled, choleric old Major, from behind a scattered pile of papers on his ormolu desk, constructed in spare-time by the Armourer-Sergeant out of fragments of propeller casing. "What the saxophones, are you doing here? This squadron has a reputation to keep up. Do you know anything?"

Blushingly our hero felt in an inner pocket for the precious document—the certificate of proficiency of the Anglo-Saxon Correspondence College of Aeronautics, which he placed before the seething soldier.

"I apologise, my boy," said the latter, delightedly, placing his hand in fatherly fashion on Vyvian's shoulder. "I thought they had sent us another dud. I see you know all about it. I am without a Colonel to assist me. Can you take the post? You fly, of course?"

Our hero blushed assent. "I made a clear ascent of three millimetres with a parasol (Fox's frame) at Farnborough in the past," said he. "I have brought my mechanic, Jiggins, along with me. He is a trusty fellow, and loves me as his life. I suppose there will be no objection to his taking the shilling?"

"Of course not, Alan; the idea!" said the Major, who beneath a forbidding exterior hid a heart of pure gold. "Make it half a crown. I suppose you will need an aeroplane. You will find a canard in the stores, next to the Maconochie tins. I got her in trade for gramophone records. 'Mississippi' was getting so tiring. Take her, my lad, and remember Nelson."

Furtively the old chief wiped a tear from his eye as the manly figure strode through the door, and then turning, heaving a sigh, to deal with a ten-inch stack of claims for unpaid alimony.

"Jiggins," said the newly laid pilot to his faithful attendant, who was waiting for him in the canteen. "We are hired. Tomorrow we bomb Berlin. Secrecy is essential, as we go alone. So mind, no more Kaolas." Even as he spoke, a shadowy figure, garbed in a suit of shabby overalls, with moustache waxed to a Morse taper, slunk hurriedly from the bar. (This is the villain, Malevolus, a German agent; keep your eye out for him.)

"Right y'ar, Guvnor," rejoined the sprightly Jiggins, wiping the froth from his ears. "We'll 'arry them 'Uns proper. Your kit came from Woolworths this morning, and I laid it out on your 'ammick. It's nile green, with a mink muff and stole. You won't arf look the lad in it."

"Silence, Jiggins," said our hero sternly, "Duty calls. Let us go and prepare the aeroplane. Have you got your tools?"

Jiggins produced a housewife, a bicycle pump, and a pair of scissors that could be used as a stereoscope, nutcrackers, screwdriver, nail file, cigar cutter, magnet, and barbed wire cutter, to say nothing of the attachment for extracting stones from horses' hooves.

"Good," said Vyvian. "Pinch an oil can from the stores, and a few yards of that Milwaukee flour bagging for the wings, and we will go and tune up."

As they neared the darkened shed, they heard a hideous screeching, as of a woman in pain. Reaching out one powerful arm, Vyvian tore the door off its hinges, and disclosed the



"What the saxophones are you doing here?"

shrinking form of a pretty munitionette, in brown holland overalls. On catching sight of the towering Greek god, the girl fished hastily in her trousers' pocket (correct: they wear 'em now) for a powder puff. Hastily dabbing her piquant nose with it, she found speech. "Oh Mister!" she said, "that there Malevolus—I found 'im with a fret-saw sawing the cylinders orf your monoplane. 'E kicked my shins 'orrid. But I got the nasty thing away from him."

Our hero smiled acknowledgments, displaying thirty-two pearl-white teeth (Nature outdone, only a guinea a set at Goldburg's!)

"You are as brave as you are beautiful," he said, with a bow that would have done credit to a prince of the blood.

The girl blushed a delicate beetroot. At a loss for words, she murmured: "Don't mensh."—and fled in confusion.

The resourceful Jiggins produced a stick of sealing wax from his vest pocket, and with the aid of a few dozen wax vestas quickly repaired the damage wrought by the sinister agent of the Kaiser. "Orl correct, Sir," he reported at length, "Shall I patch these wings up a bit, or don't you object to draughts?"

Our hero ran a careless eye over the graceful monoplane. "Oh, that'll be all right, Jiggins," he said, with a delightful *insouciance*. "Shove in a keg of dynamite, two tins of Shell, and don't forget your catapult."

Jiggins pressed lustily on the kick-starter, and the engine roared into life. (As Miss Devereux cannot be bothered with trifles, the technical Editor of "FLIGHT" has kindly supplied the mechanical data, for which he is solely responsible.) Hastily consulting Messrs. —'s manual: "Tips to Would-be Aces," our hero vaselined his face, against the terrific cold that they would encounter in high altitudes. Just as they were about to climb into the pulsing machine of death, a slim figure came running towards them. It was Milly, the Munitionette. "Oh, don't you go up in that one, Sir!" she gasped. "That's a devil, that one is. She kills a pilot every trip. Nobody can't fly her. She waits till she gets to thirty thousand feet, and then loops herself, spilling them that careless. You never ought to trust her!"

Smiling reassuringly, Vyvian lit a — cigarette (space to let). "Be of good cheer, sweet maid," he said. "Have no fear on my account. The machine will swear me to Berlin,



... quickly repaired the damage ...

and none shall cross my path and live. See, she knows me already!" the machine capered in response to his light pressure on the accelerator pedal. "One kiss, my love, and I will bring you back the Kaiser's head as a watch charm."

She raised her rose-petal lips to his, her violet eyes smiling trustfully at him. They embraced lingeringly. . . . Vyvian tore himself from her reluctant arms. "Contact!" he shouted above the roar of the engine, which sang in his ears like a million trench mortars. And as the aeroplane bounded into the Stygian night, the little maid far below watched it, and breathed a silent prayer, as she wiped the vaseline from her tip-tilted nose.

SECOND INSTALMENT.

Soaring into the inky blue-black of the starry heavens, Alan headed the docile battle-plane towards Berlin, the burrow of the cowering Kaiser. As he passed on his mission, the Dog-Star barked at him amicably. Darker and darker grew the night, and the wind howled through the rigging. By the aid of the compass (a penny at Blakey's, on Ludgate Hill) Jiggins laid the course.

Liège, Cologne, unsuspectingly sleeping, passed beneath their drumming planes; Cassel, Halberstadt, followed, and finally Potsdam. In a few short minutes they would be over the haunt of the arch-Hun! Ahead of them the searchlights broke out in unison, their questing fingers groping the sky for the form of the audacious intruder. Flaming onions spangled the sky with sickly coruscations, like Brock's Benefit of old on a rather damp night. The monoplane wriggled like a guilty snake in the eddy of the exploding shell. The hail of death was upon them. Below, in plain sight, was the Julich-splatz and the well-known contours of the Pickelhaube. Rapidly the work of death was accomplished. Jiggins tilted the deadly explosives overboard, and in a moment Berlin was flaming like an oil-shop.

Recklessly wrenching the helm round, Alan headed for home, his mission of destruction accomplished. Hardly were they clear of the prostrate city before a grim form surged out of the murky air. It was a German scout! For a moment it hovered indecisively, but in that second its doom was sealed. Alan rapidly attached to his boots a pair of roller-skates that he had thoughtfully brought with him, and glided out on to the upper



To-morrow we bomb Berlin. Secrecy is essential

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For Jan 17

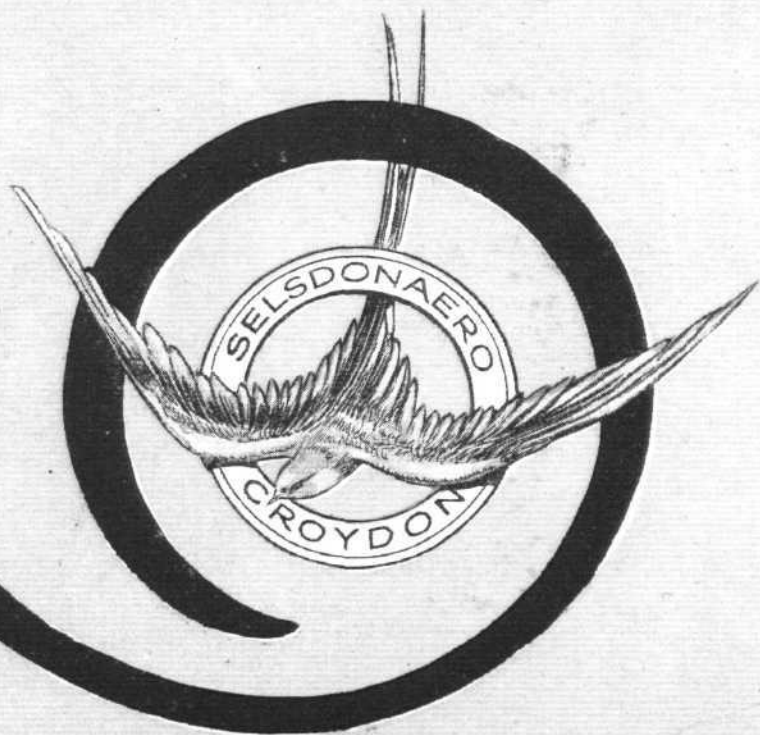
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That awful feeling when the prop. absolutely refuses to start.—By Ernest Noble.

[The following sensational story which has just reached us appears to bear a certain resemblance to the description of an alleged aerial voyage across the Atlantic which recently was published in an American contemporary, and which proved entirely unauthentic. We give it as it reached us, but disclaim all responsibility. After several years of war bread and other imitation foods our readers are probably capable of swallowing anything, so they may be able to swallow this.—Ed.]

WE were seated by the window of my apartment on the fifty-third floor of New York's most expensive and uncomfortable hotel discussing the possibilities of the Trans-Atlantic flight, my companions being two of the most famous pilots of the day. In other words, Lieutenant-Colonel John Sherry and Artful B. Dodger, the former one of the pioneers of British aviation, and the latter a young American pilot with a brilliant reputation. In common with seventeen or eighteen thousand other aviators, each had announced his intention of being the first man to fly across the herring-pond, and I was equally anxious to be a passenger on that historic voyage. If our ambitions were to be realised it was necessary to hustle, for every firm in the aircraft industry had been engaged for the past year, to my personal knowledge, in building an aerial super-Dreadnought with which they considered themselves certain to win the Northcliffe prize of £10,000. If all I had heard in the Royal Aero Club were true—and it always is—within a few short weeks the air between the American coast and Ireland would be black with competing machines. We decided to win the prize ourselves at once.

* * * *

A few days later the start was made from a secluded little bay on the Newfoundland coast. There had been a short delay at the last moment owing to what I might call engine trouble. Our flying boat was a giant quadruplane—or, to be more strictly accurate, a triplane with a spare set, and was fitted with three Liberty motors. An expert kindly lent by the Aero Club of America came down to make a final inspection of the machine, and he reported he had never seen anything like it. It was a machine, however, with which we could certainly take no liberties. Under the circumstances we held a short conference after he had left, and decided to take the engines out and substitute a couple of 750 h.p. Selfridges (at London's Lowest Horse-Power Always) and a 500 h.p. Swan and Edgar.

At last all was ready. Our crew were in their places. The provisions had been put on board; the American bar half-way along the fuselage, installed by unanimous consent as far more useful than the gun-ring, had received its last case of what Dodger called Drye Whisky because he had bought it in a dry town; and the last hundred yards of wire had been attached to the wireless outfit. It was early morning, and the day was about half broken as our motors commenced their gigantic task. That is to say, two of them, for the third did not seem to grasp the idea properly until late that afternoon. However, two was not bad for a start.

Sherry took control at first as he was more experienced in the art of navigation. He had, in fact, served in the Royal Navy, and for the purposes of our flight he had for two days and nights been studying a map of the Atlantic which he bought at the Woolworth Building—*incognito*, of course, for we were anxious our project should not be suspected. I walked around to see that our specially-trained air-mechanics, Alfred and Herbert, were comfortable. They evidently were, for Alfred had slung his hammock in the bomb rack and was playing a concertina, while Herbert was already trying to do a little fishing with a line through one of the observation windows.

The two motors were still running and everything seemed in order, so I went into the American bar to fill my fountain pen. Dodger was already there, busily engaged in trying to explain to our bar-tender



An expert reported that he had never seen anything like it.

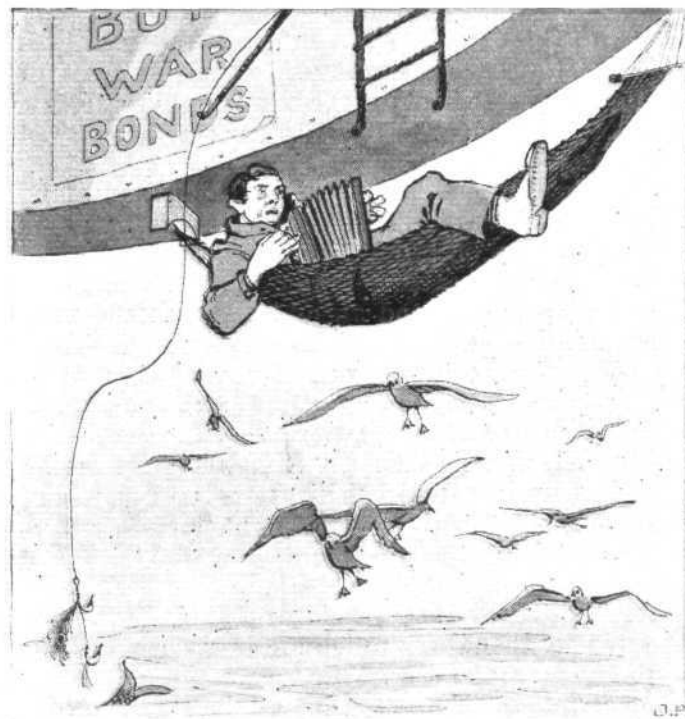
and personal servant, known as Old William, the difference between an alarm clock and a rev-indicator. In case any law-abiding reader is disposed to comment on the bar being open at such an early hour, I hasten to state that we had agreed before starting that the existing licensing laws could hardly be expected to apply to a flying-boat in mid-Atlantic. The real reason we had established one was that Dodger and I had suffered severely on a previous trip from *mal-de-mer* (or air), and it was essential to have brandy handy in case of emergency.

Some time later we rejoined our pilot. The weather was ideal for the flight, and the taxi-meter fixed on the outside of our fore-cabin window already registered £25 6s. 8d., showing we had covered nearly eight hundred miles. It had been our original intention to maintain an average altitude of 15,000 feet, this being the height at which we calculated the prevailing winds would be at their strongest and best, but Herbert said the fish were on the feed, and in deference to his wishes we came down to 300 feet, his supply of twine being limited.

At mid-day an excellent lunch was served by Old William. For the benefit of future students of aeronautical history our menu should be recorded.

After lunch we took it in turns to have an hour's rest. So did the motors, but fortunately the Swan and Edgar on the prompt side was beginning to show signs of life, and we were quite hopeful. The afternoon passed pleasantly and without incident, save when Herbert's line got tangled in a convoy of troopships and Alfred in his excitement dropped his concertina on a destroyer, for which we were duly thankful.

We were making splendid progress, the taxi-meter ticking up the twopences with monotonous regularity. About five o'clock Colonel Sherry climbed out on to the top plane with a sextant, a stethoscope, and a copy of Old Moore's Almanac, to try and take our bearings. After struggling strenuously for three-quarters of an hour, during which time



..... Alfred had slung his hammock in the bomb-rack.

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SAVOURY:

Avroes on Toast.

ENTREMETS:

Tart à Titaine.
Omelette à maillez.

Coffe. Eagle Rolls & Butter.
No Cheese

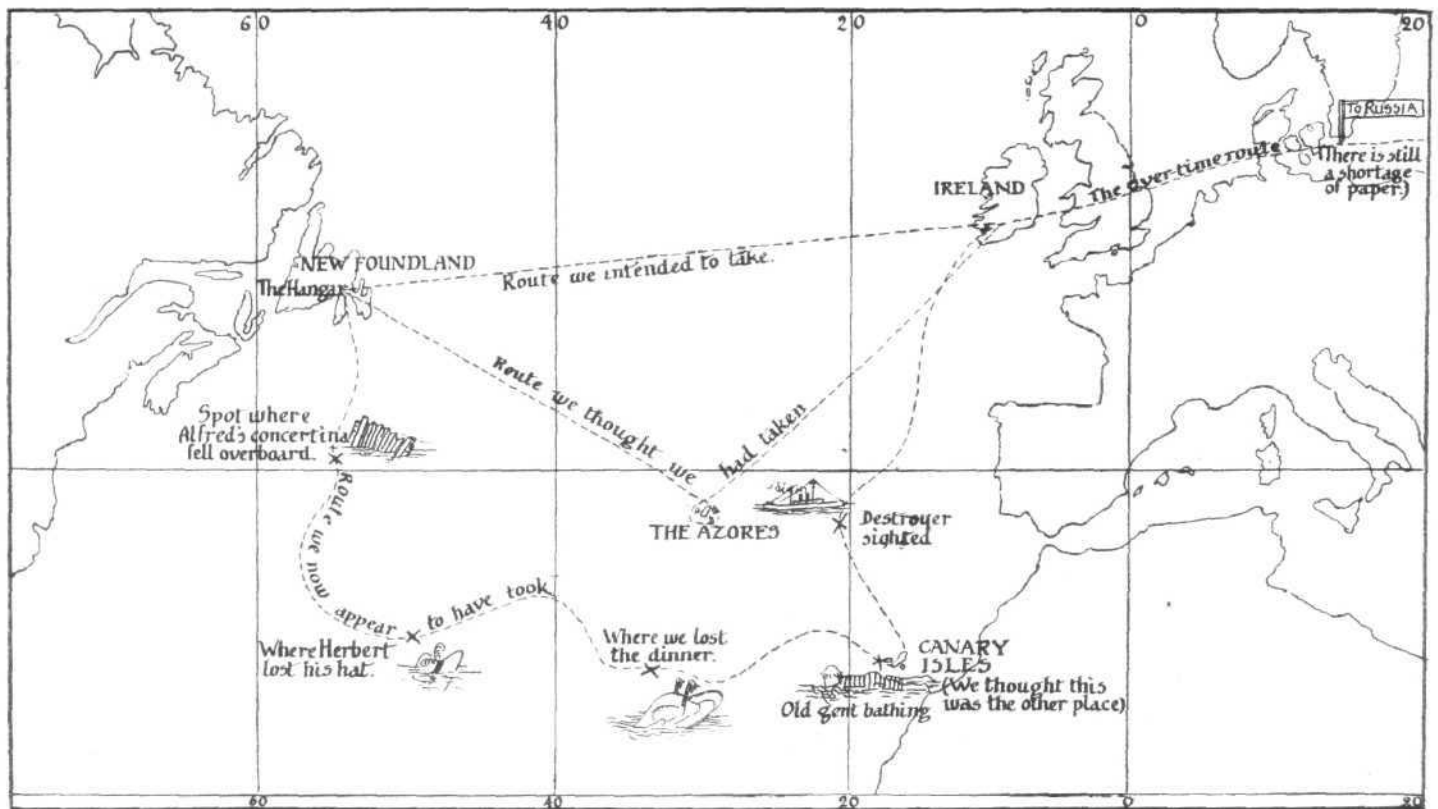
Mid-Atlantic. Nov. 31st. 1918.

he lost his Triplex goggles and had to come down three times for more note-paper, he announced that we were now in latitude $52^{\circ} 30'$, longitude $27^{\circ} 11'$, which, according to his Woolworth chart, was on our direct course for Bantry Bay.

At this moment I observed a short distance ahead a group of islands which did not appear to be marked on the map. This was somewhat disconcerting. Sherry declared his calculations were accurate, with the possible exception that in one place he had multiplied by 24 instead of dividing by 60, but Dodger, who had once been across by steamer and therefore knew the Atlantic well, said they must be the Azores. Old William was too busy preparing our dinner to offer any opinion, and the mechanics were having a quiet game of poker somewhere abaft the main petrol tanks, so I suggested it would be best to descend near one of the larger islands to enquire if we were on the right road for Ireland. We made a perfect landing just off a large and crowded pier, only breaking our lower planes and losing part of the rudder through colliding with the head of an elderly gentleman who was bathing unobserved from the beach.

We were surprised to be told we had reached the Canary Islands, which, as our map showed us, were some distance south of the course we were endeavouring to follow. It was fortunate we had discovered this in time, and we speedily corrected our direction, the broken rudder by a lucky chance making this comparatively easy.

The sun was now sinking slowly below the distant horizon, and William announced that dinner was served. We were in high spirits, for the voyage, apart from the accidental deviation from our course, looked like being a triumphant success. It was at this point we met with our first real mishap. A most excellent meal had been prepared, but just as Dodger was changing places with Sherry for a turn



THE GREAT TRANS-ATLANTIC FLIGHT.—First and only authentic map published. May be also obtained set to music. Must not be exported to Germany. Copyright.

at the wheel one of the control wires broke. The huge machine gave a violent lurch, and the dinner went overboard. Several U-boats instantly darted up from various directions, and it was obviously impossible to hope to rescue anything, so we continued on our way, the only provisions now left being some malted milk tablets and two siphons of soda.

During the night I was suddenly awakened by an ominous sound. Hastily arousing Sherry and the mechanics, we made a thorough inspection of the motors. Everything seemed in order, and the instruments—or those which happened to be working, including two spectroscopes, a rain-gauge, and a perpetual calendar—showed no signs of anything unusual, and yet the horrible rattling noise continued, loud above the roar of the propellers. It was only when Dodger, who was getting quite nervous, came to our assistance that we solved the mystery. Old William was asleep in the bar and snoring in a manner peculiarly his own. It was a great relief to us all to have found the source of the trouble, which was soon suppressed.

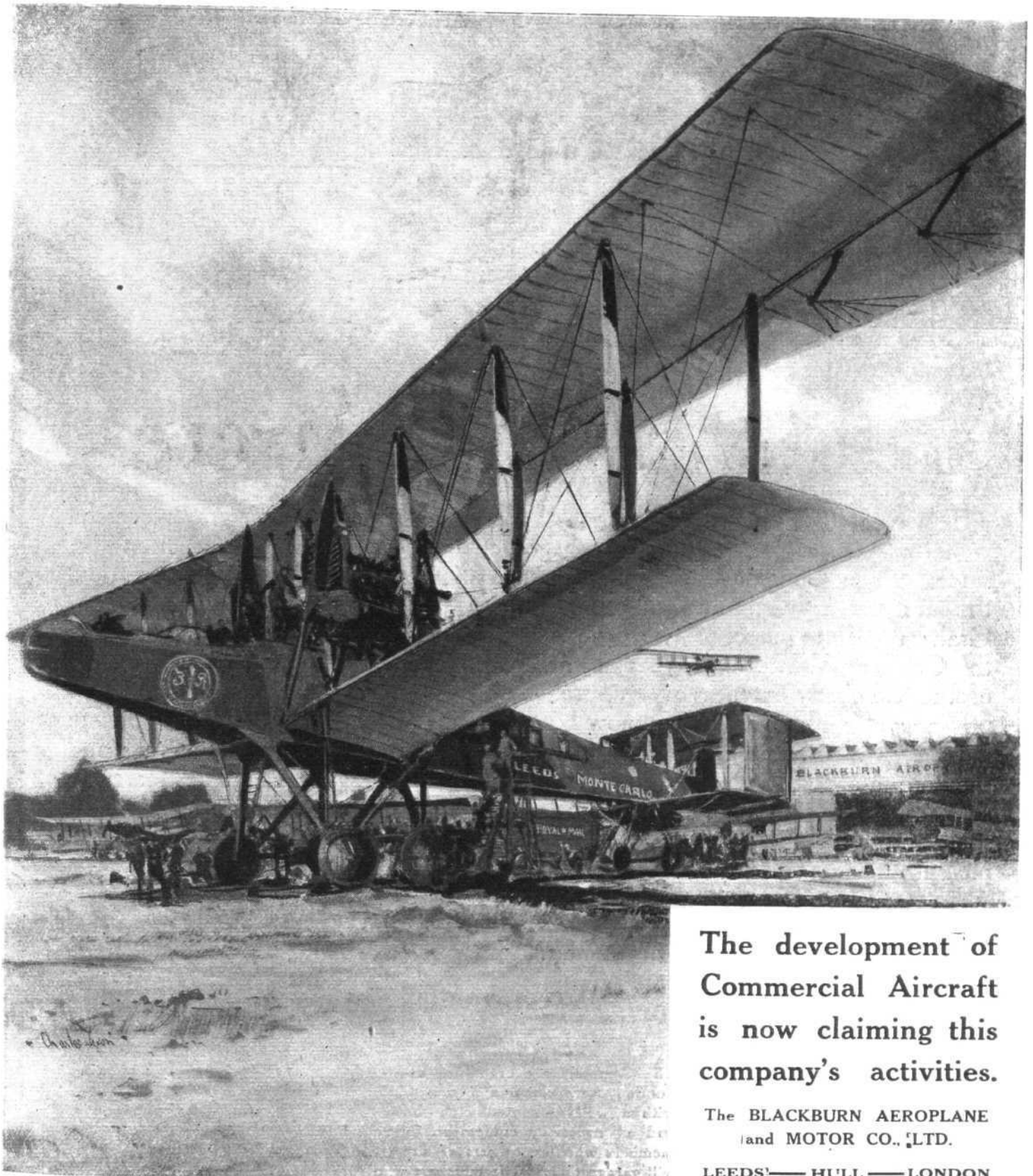
At dawn we saw a destroyer, and succeeded in attracting her attention by means of our wireless apparatus, which, as a matter of fact, became entangled in her funnels. They hailed us and asked who we were. We gave them our names and addresses, and told them where we were bound for. They seemed interested, and told us where we could go, but we could not find the place on the map, and may have misunderstood them. They enquired if we wanted any aid, and we replied we were quite happy but hungry, our food having gone prematurely overboard. On learning we had no coupons, they expressed their regrets that the law did not permit them to supply food to strangers who were not regis-

tered with them, and wished us *bon voyage*. In a few minutes the destroyer had gone ahead and vanished in the gathering mist.

We drank a little soda water and looked at one another in silence for awhile, but our courage never failed us. We were soon startled into activity by a wild cheer from Old William, who excitedly drew our attention to the fact that all three motors were going at the same time. It was a happy omen. Assisted by the extra power now developing, we were able to increase our altitude, reaching at last a height of nearly a thousand feet, although the mist was now so thick that it was difficult to be sure whether this figure was shown by the altimeter or the rev. counter. The compass jammed at times, but on the whole everything was going beautifully.

It was late in the day before we sighted any land marks. According to our "A.B.C.-Bradshaw" we should have been off or on the Irish coast many hours ago, and we were getting rather uneasy. Suddenly Herbert sang out "Land ahead!" and at the same moment Alfred exclaimed "Land astern!" There was no doubt about it, we were well over land. Coming down as low as we dared, and running all motors at about three-quarters throttle, we called out to a labourer in a field, "Say, where are we?" He looked up in astonishment at the unusual sight, and then replied, with a certain amount of scorn in his voice, "Why, bedad—there ye ar-re!" "This is Ireland all right," said Sherry as we started to climb, "we've overshot the mark a bit." Dodger suggested we should try to land near the Isle of Man, where he had a girl cousin staying.

We ran into thick mist again, and there was nothing for it but to carry on, Old William expressing a fervent desire to reach Blackpool, where he had a maiden



The development of
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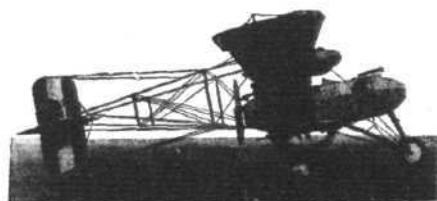
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LEEDS — HULL — LONDON

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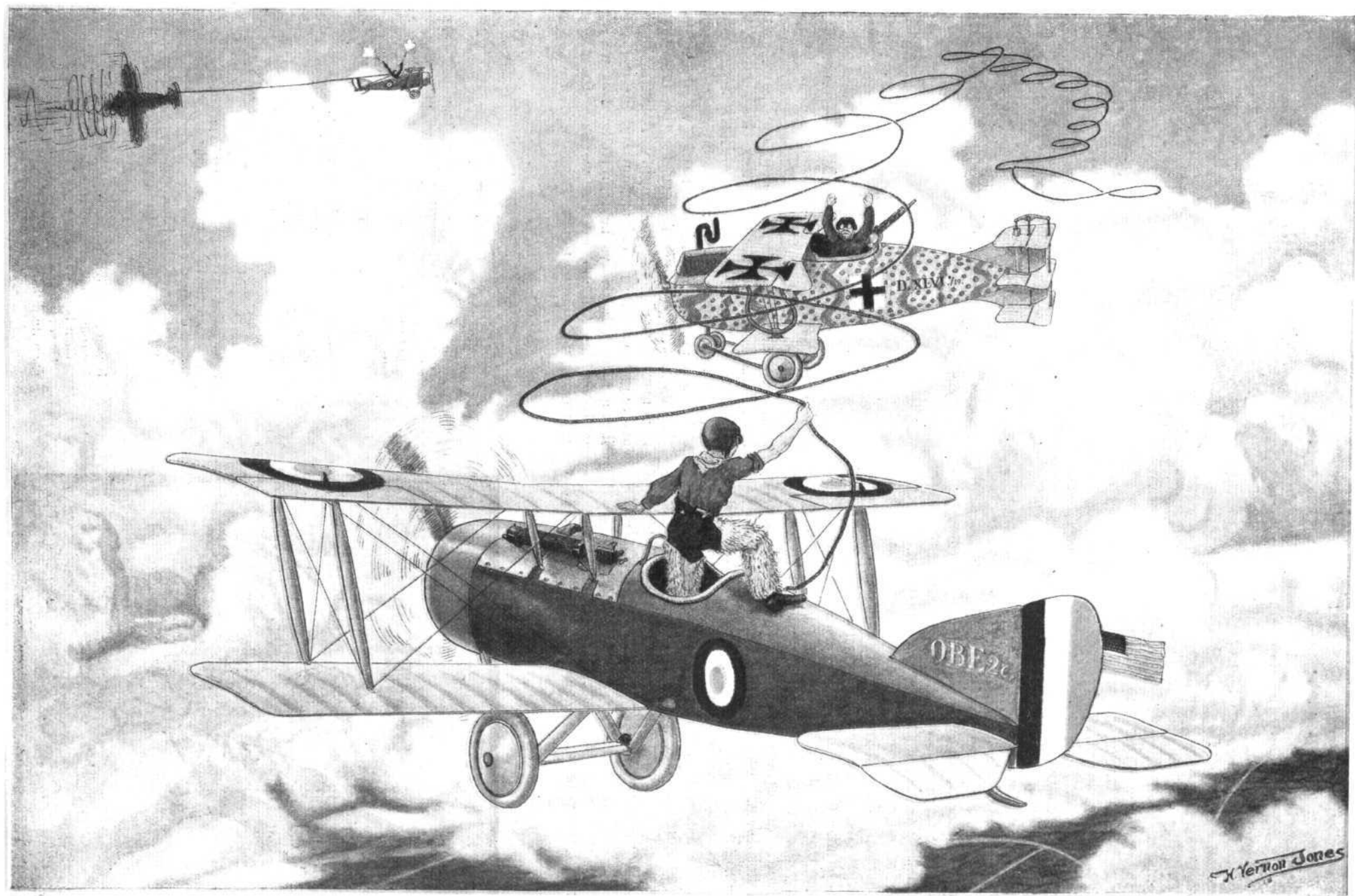
AIRCRAFT

Steele's Adm. Service.



the type 14 which appeared
before the war

1912-1913, 1914-1915, 1916-1917, 1918-1919, 1920-1921, 1922-1923, 1924-1925, 1926-1927, 1928-1929, 1930-1931, 1932-1933, 1934-1935, 1936-1937, 1938-1939, 1940-1941, 1942-1943, 1944-1945, 1946-1947, 1948-1949, 1950-1951, 1952-1953, 1954-1955, 1956-1957, 1958-1959, 1960-1961, 1962-1963, 1964-1965, 1966-1967, 1968-1969, 1970-1971, 1972-1973, 1974-1975, 1976-1977, 1978-1979, 1980-1981, 1982-1983, 1984-1985, 1986-1987, 1988-1989, 1990-1991, 1992-1993, 1994-1995, 1996-1997, 1998-1999, 2000-2001, 2002-2003, 2004-2005, 2006-2007, 2008-2009, 2010-2011, 2012-2013, 2014-2015, 2016-2017, 2018-2019, 2020-2021, 2022-2023, 2024-2025, 2026-2027, 2028-2029, 2030-2031, 2032-2033, 2034-2035, 2036-2037, 2038-2039, 2040-2041, 2042-2043, 2044-2045, 2046-2047, 2048-2049, 2050-2051, 2052-2053, 2054-2055, 2056-2057, 2058-2059, 2060-2061, 2062-2063, 2064-2065, 2066-2067, 2068-2069, 2070-2071, 2072-2073, 2074-2075, 2076-2077, 2078-2079, 2080-2081, 2082-2083, 2084-2085, 2086-2087, 2088-2089, 2090-2091, 2092-2093, 2094-2095, 2096-2097, 2098-2099, 2100-2101, 2102-2103, 2104-2105, 2106-2107, 2108-2109, 2110-2111, 2112-2113, 2114-2115, 2116-2117, 2118-2119, 2120-2121, 2122-2123, 2124-2125, 2126-2127, 2128-2129, 2130-2131, 2132-2133, 2134-2135, 2136-2137, 2138-2139, 2140-2141, 2142-2143, 2144-2145, 2146-2147, 2148-2149, 2150-2151, 2152-2153, 2154-2155, 2156-2157, 2158-2159, 2160-2161, 2162-2163, 2164-2165, 2166-2167, 2168-2169, 2170-2171, 2172-2173, 2174-2175, 2176-2177, 2178-2179, 2180-2181, 2182-2183, 2184-2185, 2186-2187, 2188-2189, 2190-2191, 2192-2193, 2194-2195, 2196-2197, 2198-2199, 2200-2201, 2202-2203, 2204-2205, 2206-2207, 2208-2209, 2210-2211, 2212-2213, 2214-2215, 2216-2217, 2218-2219, 2220-2221, 2222-2223, 2224-2225, 2226-2227, 2228-2229, 2230-2231, 2232-2233, 2234-2235, 2236-2237, 2238-2239, 2240-2241, 2242-2243, 2244-2245, 2246-2247, 2248-2249, 2250-2251, 2252-2253, 2254-2255, 2256-2257, 2258-2259, 2260-2261, 2262-2263, 2264-2265, 2266-2267, 2268-2269, 2270-2271, 2272-2273, 2274-2275, 2276-2277, 2278-2279, 2280-2281, 2282-2283, 2284-2285, 2286-2287, 2288-2289, 2290-2291, 2292-2293, 2294-2295, 2296-2297, 2298-2299, 2300-2301, 2302-2303, 2304-2305, 2306-2307, 2308-2309, 2310-2311, 2312-2313, 2314-2315, 2316-2317, 2318-2319, 2320-2321, 2322-2323, 2324-2325, 2326-2327, 2328-2329, 2330-2331, 2332-2333, 2334-2335, 2336-2337, 2338-2339, 2340-2341, 2342-2343, 2344-2345, 2346-2347, 2348-2349, 2350-2351, 2352-2353, 2354-2355, 2356-2357, 2358-2359, 2360-2361, 2362-2363, 2364-2365, 2366-2367, 2368-2369, 2370-2371, 2372-2373, 2374-2375, 2376-2377, 2378-2379, 2380-2381, 2382-2383, 2384-2385, 2386-2387, 2388-2389, 2390-2391, 2392-2393, 2394-2395, 2396-2397, 2398-2399, 2400-2401, 2402-2403, 2404-2405, 2406-2407, 2408-2409, 2410-2411, 2412-2413, 2414-2415, 2416-2417, 2418-2419, 2420-2421, 2422-2423, 2424-2425, 2426-2427, 2428-2429, 2430-2431, 2432-2433, 2434-2435, 2436-2437, 2438-2439, 2440-2441, 2442-2443, 2444-2445, 2446-2447, 2448-2449, 2450-2451, 2452-2453, 2454-2455, 2456-2457, 2458-2459, 2460-2461, 2462-2463, 2464-2465, 2466-2467, 2468-2469, 2470-2471, 2472-2473, 2474-2475, 2476-2477, 2478-2479, 2480-2481, 2482-2483, 2484-2485, 2486-2487, 2488-2489, 2490-2491, 2492-2493, 2494-2495, 2496-2497, 2498-2499, 2500-2501, 2502-2503, 2504-2505, 2506-2507, 2508-2509, 2510-2511, 2512-2513, 2514-2515, 2516-2517, 2518-2519, 2520-2521, 2522-2523, 2524-2525, 2526-2527, 2528-2529, 2530-2531, 2532-2533, 2534-2535, 2536-2537, 2538-2539, 2540-2541, 2542-2543, 2544-2545, 2546-2547, 2548-2549, 2550-2551, 2552-2553, 2554-2555, 2556-2557, 2558-2559, 2560-2561, 2562-2563, 2564-2565, 2566-2567, 2568-2569, 2570-2571, 2572-2573, 2574-2575, 2576-2577, 2578-2579, 2580-2581, 2582-2583, 2584-2585, 2586-2587, 2588-2589, 2590-2591, 2592-2593, 2594-2595, 2596-2597, 2598-2599, 2600-2601, 2602-2603, 2604-2605, 2606-2607, 2608-2609, 2610-2611, 2612-2613, 2614-2615, 2616-2617, 2618-2619, 2620-2621, 2622-2623, 2624-2625, 2626-2627, 2628-2629, 2630-2631, 2632-2633, 2634-2635, 2636-2637, 2638-2639, 2640-2641, 2642-2643, 2644-2645, 2646-2647, 2648-2649, 2650-2651, 2652-2653, 2654-2655, 26



How Bud Jackson (from Texas), of the U.S. Flying Corps, captured and brought back the Wunanataner biplane. By H. Vernon Jones.

aunt who kept a boarding-house. Our tanks were still far from empty, and we could fly many hours yet. We were all feeling fatigued, for the strain was becoming heavy. Only the thoughts of the £10,000 kept us awake through the long night which ensued—those and the snoring which proceeded from the American bar, alas! long closed for lack of supplies.

Daybreak found us over *terra firma* again, and we strained our eyes eagerly to pick up some familiar land-mark. Dodger was the first to draw our attention to a distant lake, which we all thought we recognised as the Welsh Harp. Sherry, whose knowledge of navigation had been so invaluable, had marked out what he believed to be our course on his map, and showed us Hendon plainly indicated. We were not long in descending on the placid waters of the lake, but on scrambling on shore on what we took to be the Cricklewood side an unexpected view met our eyes. The familiar Schweppe factory was not there. In its place stood a quaint and charming little village which bore no resemblance to London's north-western suburbs. The air was filled with the rattle of machine-guns, which were to be seen at every corner. In the market place a group of ballet dancers in picturesque costumes were whirling madly to the music of a band. Occasionally a peasant woman would emerge from a cottage and attempt to cross the street to buy her caviare and vodka for dinner, but before she had reached the other side a burst of firing would mow her down. I stood still in amazement. Was I dreaming? A small boy selling papers came along, a machine-gun slung jauntily across his back. I asked him for an *Evening News*, handing him a shilling. He gave me a paper and some change. The coins were roubles, and the paper was the *Nijni-Novgorod Newski*! We were in Russia!

The local revolution was suspended for half-an-hour



. the dinner went overboard.

while we were accorded a public welcome by the Bolshevik Mayor and his Extra-Bolshevik Corporation.

We are now walking home in our pants, which are all they left us. I am posting this account at a little place on the shores of the Black Sea, and we hope to reach home by next Easter.

We are proud to think our names will be for ever famous in the world's history as the first daring adventurers to cross the mighty Atlantic by air, although our little miscalculation and the loss of our flying boat will always be regretted. But we mean to have that £10,000, even if we have to take the matter to the County Court.



Limericks

Some 'bus is the big Handley Page.
To walk its full length takes an age;
'Tis so fast, it's departed
Before it has started,
And its C.G. is kept in a cage.

! ! !


A strange thing is the Hannoveraner,
From its nose to its double-tailed sterner,
In fact, it's *très poche*
(Or so thinks the Boche).
I'd much sooner haveabaner.

! ! !

It was said that a lady named Pegguet,
Flew over the lines on a Breguet,
And dropped 15 tons
Of bombs on the Huns.
But I think they are pulling our leguet.

! ! !

If you see a Wight plane (Motor Canton)
Approach with a wonderful slant on—
Turn back over front,
Or some other stunt,
Then its pilot is Marcus D. Manton.



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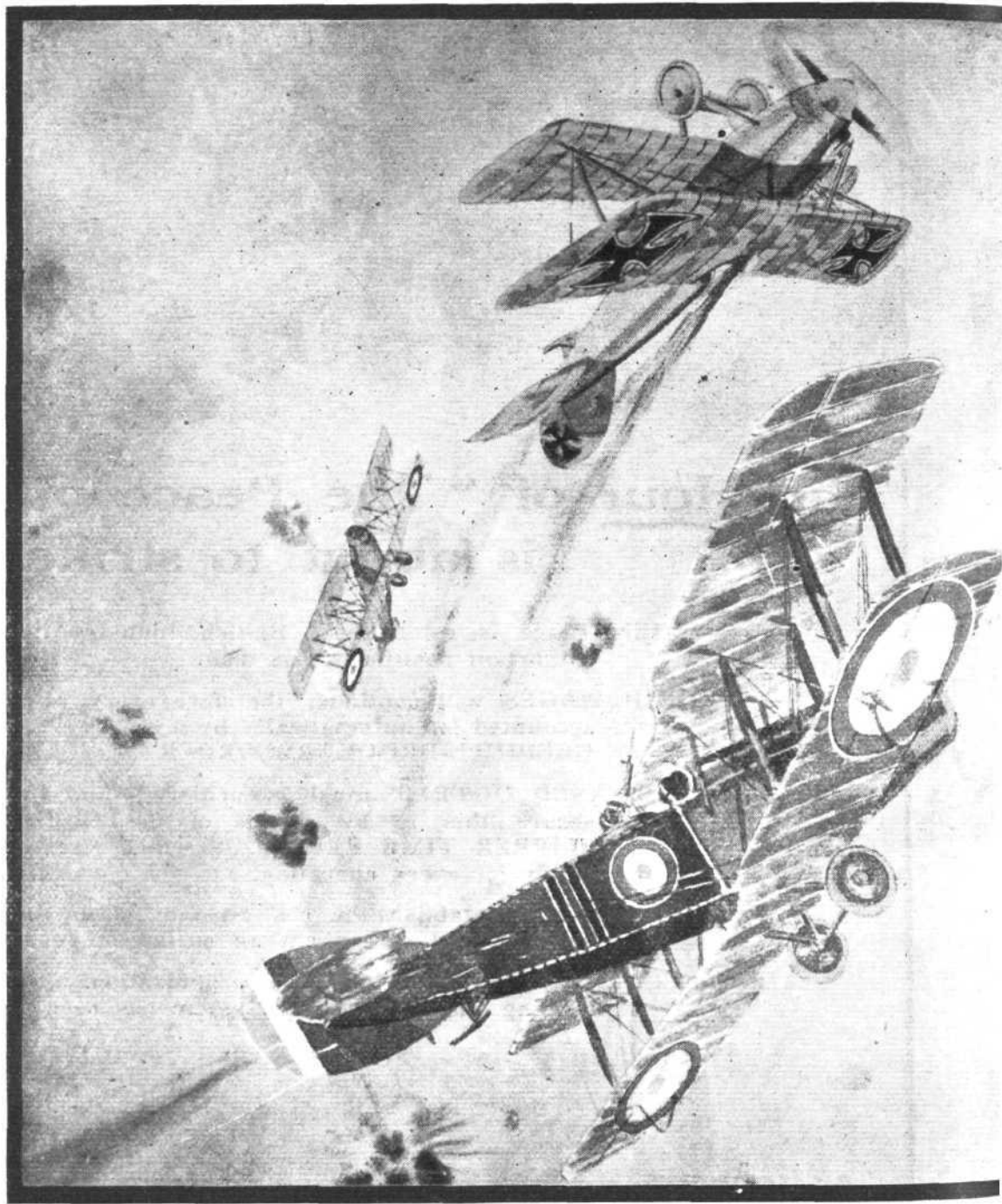
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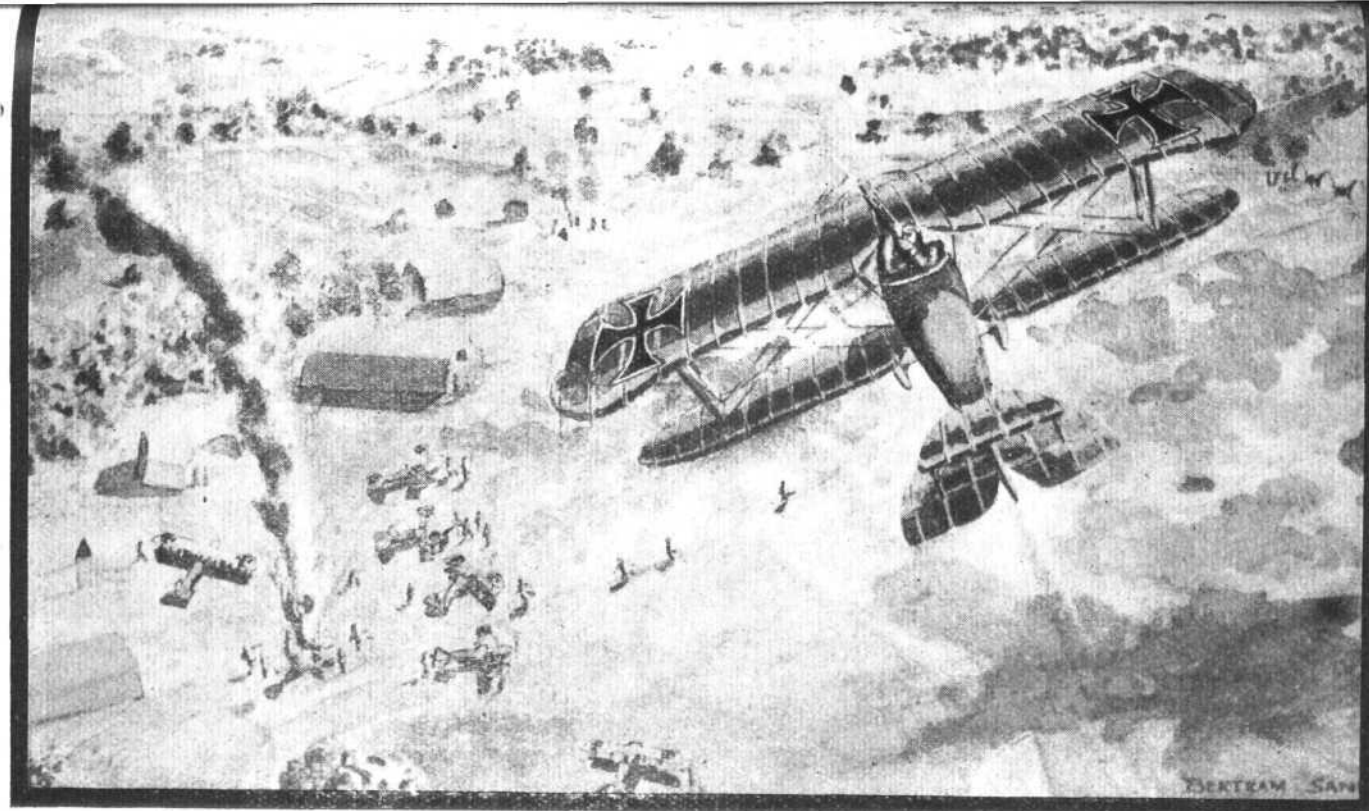
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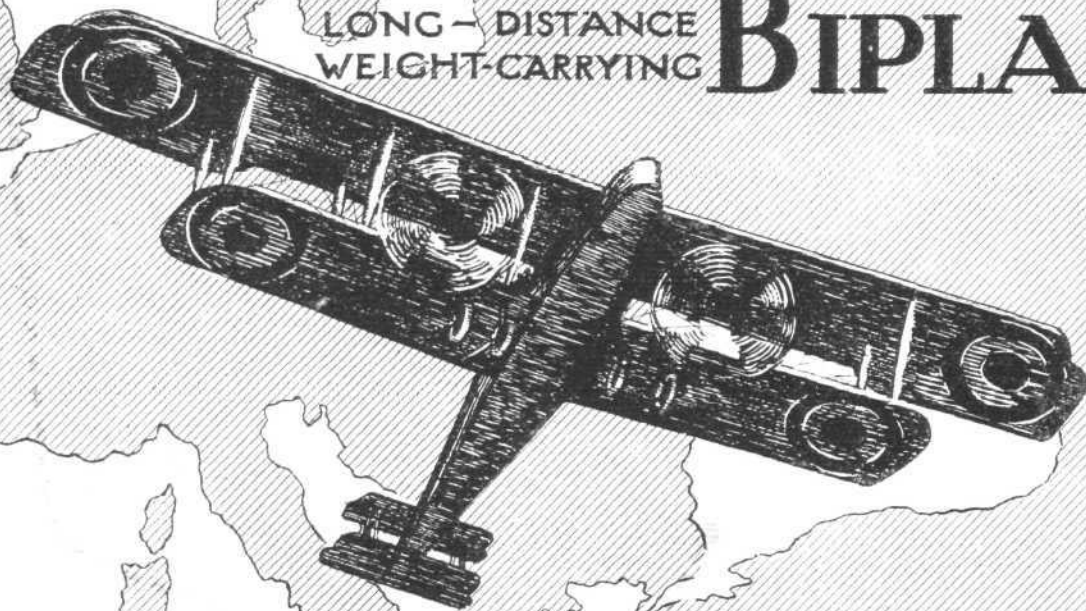
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The HANDLEY PAGE

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1917. PILOT and 20 PASSENGERS
1000 miles

1918. PILOT and 40 PASSENGERS
6500 miles



CRICKLEWOOD · LONDON · N.W.2



The optimist. By Lieut. G. D. Manchin, R.A.F.



It was a dull, damp October afternoon. I had twenty minutes to wait for my train, so I sauntered dejectedly into the cheerless waiting-room of a dilapidated railway-station that had better remain nameless.

I derived what consolation I could from the company's four-year-old prospectus of holiday tours, and then fell to wondering why Dora had not made it a punishable offence to advertise unobtainable whisky on coloured posters, six feet by four. I reflected that, though in the course of a varied career I had seen many pictures capable of creating a thirst, never yet had my tired eyes lit on the masterpiece that would quench one. At this stage of my meditation the waiting-room door opened, and a seedy-looking individual of some fifty winters entered accompanied by an icy blast of wind. I coughed as a gentle hint to him to shut the door.

"That's a narsty corf, Guv'ner," he said as he pushed the door to with his heel. "Got the 'flu?"

"I hope not," said I.

"Nobody 'as no business to 'ave the 'flu," said he, as he sat down with precision on the company's only chair.

"Nobody wants it," said I.

"Then why do they get it?" said he. "Tell me that. Look at me—fifty-three on Xmas Day, and never 'ad the 'flu in my life, and never goin' to 'ave it, as sure as my name's William Henry."

"Oh!" said I.

"Yus," said William Henry. "If you don't want the 'flu, don't 'ave it. What did 'Erbert Spencer say?"

I declared truthfully that I did not know.

"No," said William Henry, "of course you don't! If you did you wouldn't 'ave that narsty corf."

"Well, what did he say?" I asked in all humility.

"'E sed this, did 'Erbert Spencer, and 'e sed it mor'n once. 'E sed it with 'is larst breath, and people only larfed at 'im the same as they did at Lord Roberts."

"But what *did* he say?" I urged.

"Well, I'm tellin' yer, if ye'll only listen. 'E sed this, did 'Erbert Spencer: Hedukite the hupper clawses. That's what 'Erbert Spencer sed, and 'e never sed a truer word, never."

"But," said I, "what's that got to do with the 'flu?"

"Heverythink," snapped William Henry, warming up to his subject. "The 'flu's caused by germs, hain't it? If yer don't believe me, read the news-

pipers. Hedukishun's the only cure for germs. Put two and two together, and as 'Erbert Spencer ses—hedukite the hupper clawses."

"But why the *upper* classes?" I asked.

"Hedukishun," said William Henry as he fixed me with the eye of a pedagogue, "is like water. It cawn't run hup 'ill; it runs dahn. Hedukite the hupper clawses, and it runs dahn to the lower clawses. See?"

"Yes, but educate them in what?"

"Hantiseptics," answered William Henry fiercely. "What's the use of Latin and Greek against the 'flu? Why, no use! Hantiseptics is the thing! Look at that!" he commanded as he thrust something into my hand.

I looked at it carefully. It was a small flat stone with a hole in it, through which passed a particularly dirty piece of string tied to form a loop.

"What is it?" I asked.

"A hantiseptic," said William Henry. "I'm only a pore man, but I wouldn't part with that there hantiseptic fer hanythink. Saved my life, it 'as—mor'n once. The only time I ever caught a cold was through being without it, and not through no fault of my own neither. And therby 'angs a tile. That hantiseptic 'as a 'istory, it 'as. Nearly lorst it once," he added, reminiscently.

"Indeed," said I.

"Yus," said William Henry. "It 'appened like this. When it was time for me to come aht of jile—"

"Jail!" I exclaimed.

"Yus, Guv'ner, I was hunfortunate."

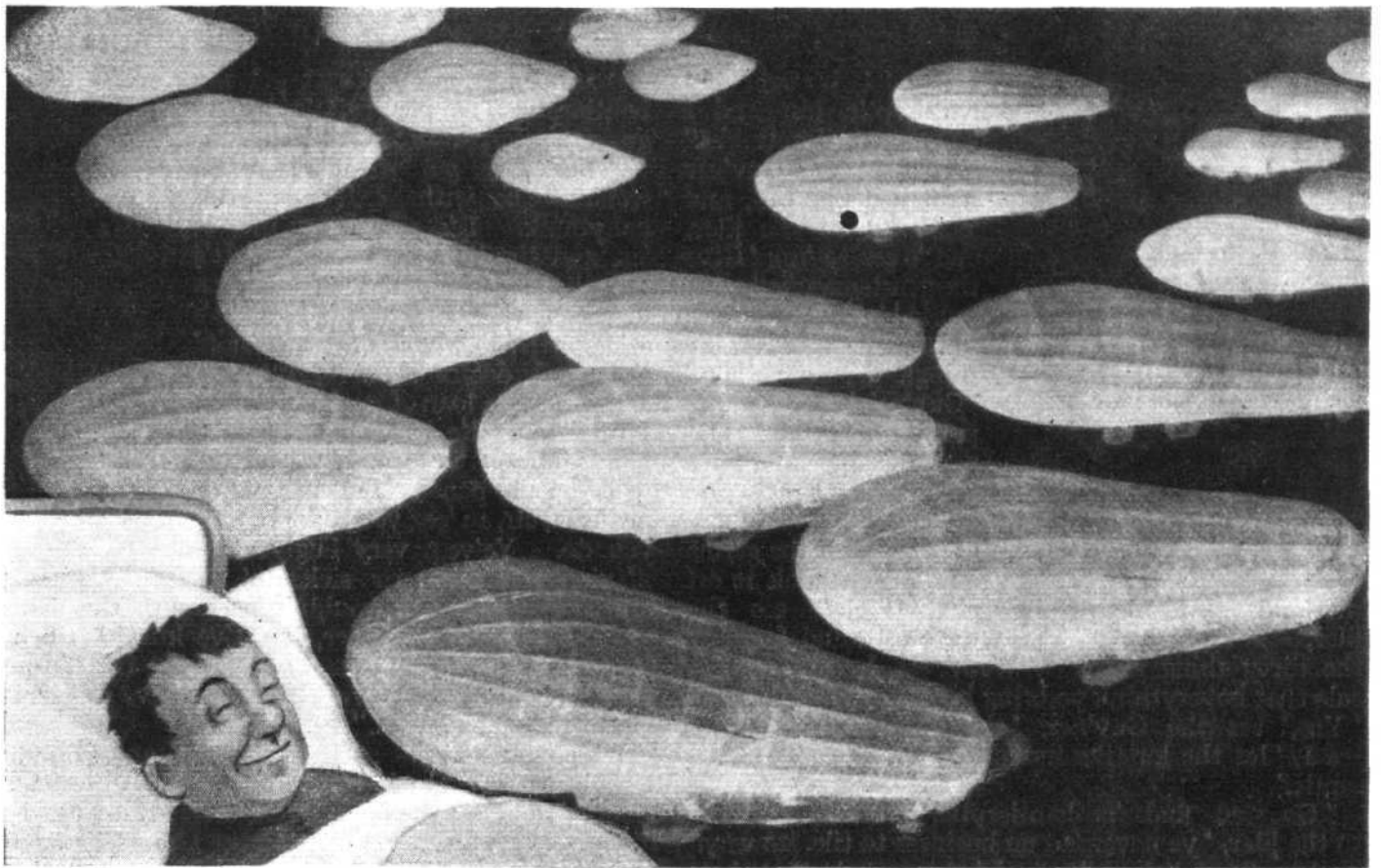
"But what were you in jail for?"

"Fer doin' nawthin', Guv'ner, that's the strite truth. I was jest leanin' hup against a jeweller's window henjoyin' the sweet night hair, when a copper comes along, and ses, 'Nah, then, what yer doin'?' I ses, 'Doin' nawthin', and 'e ses, 'Yer cawn't do nawthin' on my beat,' and runs me hin. But what I want ter tell you Guv'ner is abaht this hantiseptic. When it was time fer me to come aht, the jiler comes and pitches my things on the floor, and ses, 'There ye hare!' 'There ye hare what?' ses I; 'hisn't it a rule that heverythink yer bring hin ye can bring aht?' 'E ses, 'Yus, heverythink ye bring hin ye can bring aht, but what d'ye want? Ye've got yer 'at, ye've got yer coat, ye've got yer trousers, ye've got yer boots, ye didn't 'ave no stockins, what d'ye want?' Well, I jest drew myself hup, and looks 'im strite in the eye, and ses, 'I want my hantiseptic.' 'E ses, 'Ye want yer *what*?' I ses, 'I want my hantiseptic. Hisn't it a rule that heverythink ye bring hin ye can bring aht?' 'E ses, 'Yes, heverythink ye bring hin ye can bring aht, and ye've got heverythink.' I ses, 'No, sonny, I've not got my hantiseptic. Show me to the Guv'ner!'

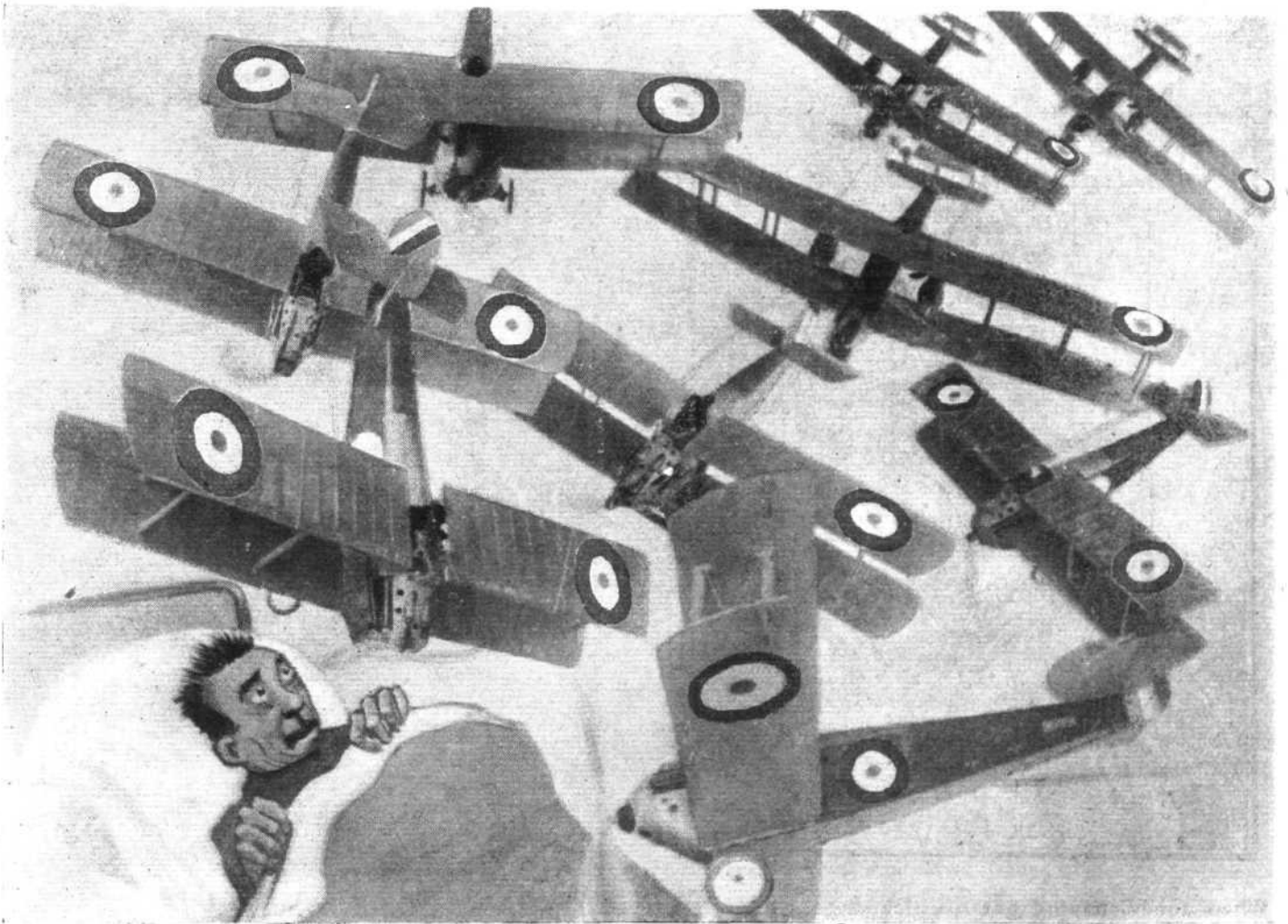
"Well, I was tiken before the Guv'ner of the jile, and I ses to 'im, 'Hisn't it a rule that heverythink ye bring hin ye can bring aht?' 'E ses, 'Yus, that's the lor.'



"I want my hantiseptic."



In 1914 the Hun had a dream of the Zepps.' return after destroying London.



But when "the day" came he awoke to the real state of things. *Photographic fantasies by J. Edge.*



"I was jest leanin' hup against a jeweller's window. . ."

me and gave me a bawth.' 'Hoh!' ses the jiler, 'I thought it was a mascot, and I threw the dirty thing away.' 'Well,' ses I, 'hisn't it a rule that heverythink ye bring hin ye can bring aht?' 'Yus,' ses the Guv'ner, 'that's the lor.' 'Well,' ses I, 'let the lor tike its course. I want my hantiseptic.'

'Go and find 'is hantiseptic,' ses the Guv'ner to the jiler, 'ye never 'ad no business to tike it away.' And would ye believe it, sir, I 'ad to wite in that there jile three hextra days and three hextra nights—and

I ses, 'I brought my hantiseptic hin and I want to bring it aht.' Well, sir, the Guv'ner scratched 'is 'ead, and 'e turned to the jiler, and 'e ses to 'im, 'Give the gentleman 'is hantiseptic!' The jiler sed, 'E never 'ad mor'n the things 'e's got hon.' 'Guv'ner,' ses I, quite polite-like, 'this hignorant hofficial don't know what a hantiseptic his. I 'ad it rahnd my neck to keep the germs off, and 'e took it orf

no compensation—before I got my hantiseptic. The jiler sed 'e 'ad to go to the Corporation abaht it.

"But I've got it now, and I wouldn't be withaht it again fer hanythink. It's saved my life, it 'as, and the life of my family. It's kep the 'flu aht of our street, when hevery hother street rahnd abaht's a 'orspittle. Only this very mornin' the panel doctor came to me and arsked fer the loan of my hantiseptic. I told 'im strite if he 'adn't got a hantiseptic of 'is own 'e wasn't fit to be on the panel. But it goes to my 'eart, sir, to 'ear you corf the way you do. Ye've a very hugly complexion, sir, and yer sickenin' fer 'flu sure enough. I wouldn't part with this hantiseptic to my own brother, but I've kind of tiken a fancy to you. Sooner than see you get the 'flu and sink inter an early grive I'll let you 'ave the hantiseptic fer 'arf-a-crown."

I was staggered at such generosity, and said that I could not dream of depriving him of so precious a possession. But the honest fellow closed my hand on it and said that it was mine. I gave him half-a-crown, and that same afternoon went to bed with a temperature of 103°.



"I will let you 'ave the hantiseptic fer 'arf-a-crown."



When Jones, having got his ticket, goes home on leave. By Gerald Pearce.



Mr. Chimpanzee's flying machine. By F. M. W.

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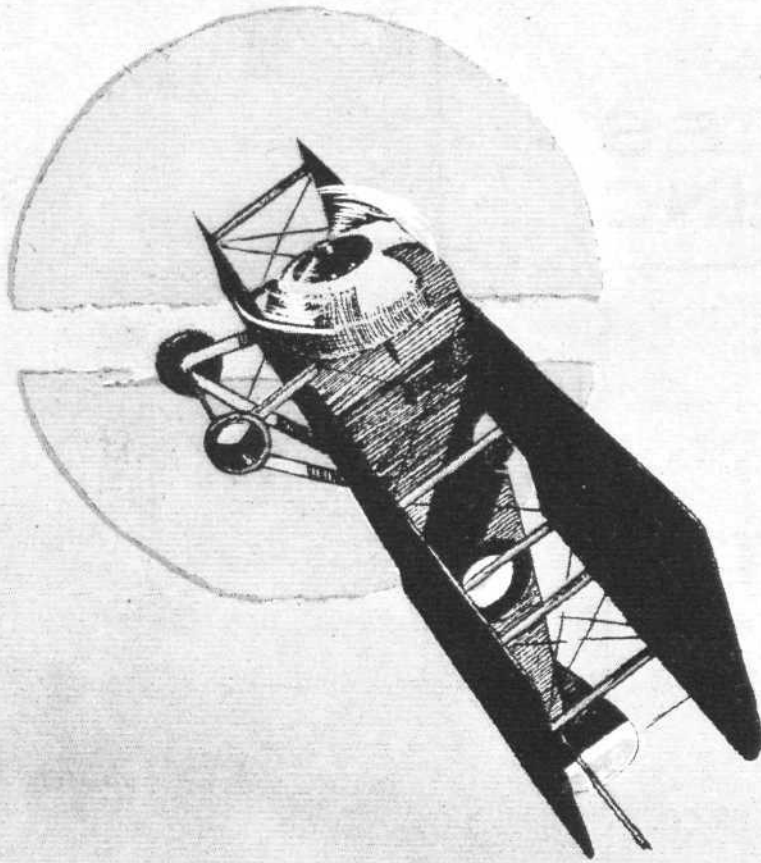
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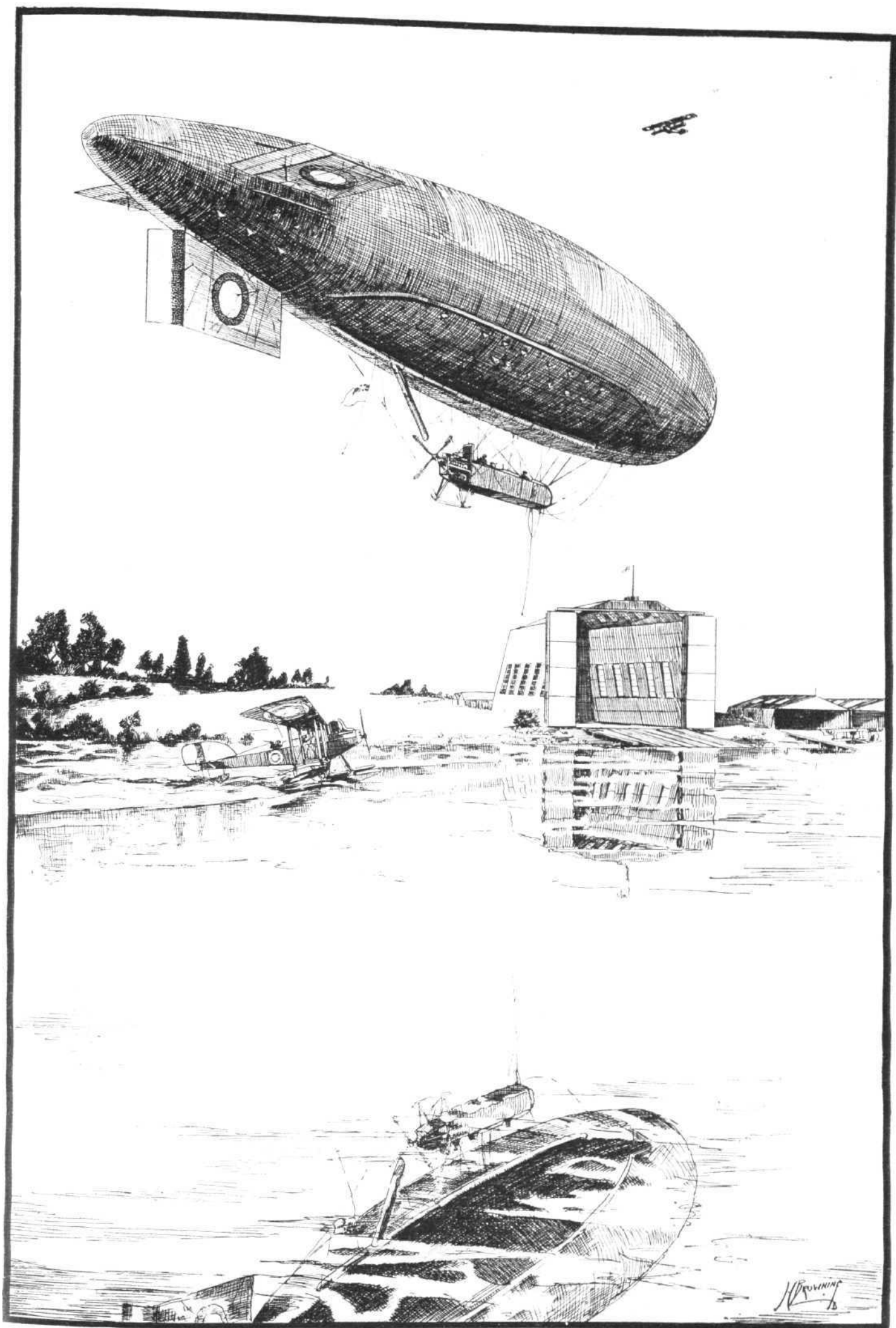




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Return from a patrol. By H. Browning.

THE CHRONICLES OF ENG

Being More Translations from Curious Hieroglyphic Documents Discovered in the Ruins of the City of Lon.

BEHOLD, it is written in the books of the chronicles that there was strife among the peoples of the land of Eng and they of the country of the Hun, and that the strife endured with exceeding great bitterness for the space of fifty and one months. And it came to pass that in the fourth year of the strife they who had governance over the House of the Air said unto the chief counsellors of the King: Lo, if thou wouldst strafe the men of the Hun with a great strafe so that with one voice they shall cry out saying Kamer-ad; remove us, we pray thee, from aught to do with they who are concerned with the King's chariots and his footmen and those who hold authority over the fleets of the galleys. For behold they know naught of the ways of them that fly, and it is not seemly that we should remain thus.

And there was among the scribes one who cried with a loud voice, refusing to hold his peace, saying: Let them who fly in the King's service wear even a dress apart that they may not be confused with them that creep on the earth or swim on the great waters of the earth. And behold the counsellors of the King hearkened unto the clamour, and saw that it was good, and they said: Let it be so. And after a space of time it was so.

Then did they who sat in authority in the House of the Air call together all the makers of fine apparel, and said unto them: Make us, we pray thee, certain garments of price which shall even be unlike any that have been seen aforetime. And the makers of fine raiment hied them forth, and did even as had been said unto them, and it came to pass that all men of the House of the Air did appear in the public places in the apparel which had seemed good unto the satraps and the captains of the air. Yet after a short space this raiment seemed not good in the sight of them that apparelled themselves with it, and those in authority called again unto the cunning makers of dress and the weavers of fine cloth, and said: Behold, this thy work is not good in our sight. And in the fulness of time they returned saying: Here is apparel like unto nothing on earth. Even the sun in his glory is but a circumstance to he who shall appear in the market place clothed in this raiment. And those who were in authority rejoiced and were exceeding glad, and commanded all men of the House of the Air that they should clothe themselves in the gorgeous raiment that those skilled in the art of the makers of apparel had shewn unto the authorities.

And when they were seen in the public places of Lon, then did the women cry out and say: Behold these who are clad like unto the bird of plumage; and they were consumed with an exceeding great envy, for aforetime the women of the land had clothed themselves in all manner of fine raiment, but the men of Eng did wear any old thing because of the exceeding great price the wives and the daughters of men paid

unto the sellers of apparel. And the women took counsel among themselves, saying: Lo, it is not seemly that we should be left on the mat. Let us even wangle it so that we may wear raiment like unto this. And certain of them who were known unto these in authority over the House of the Air went unto the captains, and said: Let us, we pray thee, come in unto the House of the Air that we may do our bit. Which was after the manner of speech of the time of the great strife. And the captains of the House of the Air rent their garments, saying: Behold, we want not these women, but peradventure, if we refuse them their desire, then will our lives be not worth living.

So it came to pass that them who had wangled with the House of the Air did hie them forth to the makers of apparel, and clothed themselves in all manner of fine raiment, and appointed themselves chiefs over all the women of the air. And they sent out into the public places criers calling unto the women of the land to come into the House of the Air, promising many talents of silver unto them who heeded the call. And they said privily unto one another: Lo, we are on a good thing, for we shall be held in esteem in the land. Even may we wangle unto ourselves the order of Eng. Which was held as of great price among those of the land who saw not the face of an Hun save those who were kept in bondage.

And the women of the land of Eng came unto the House of the Air in their thousands. Some there were who said: Behold, if we play the game aright, then may we get husbands for ourselves from among the wearers of the hats that are brass.

And behold it was so, and many of the damsels gained unto themselves husbands from among the men of the House of the Air, and many did no manner of work save in the brewing of Tè, yet did they draw shekels even as promised by the criers. But of those who had come in unto the House because, after the manner of speech of the people, it was the right thing, some of these did well in the land, but they were few among the many. But there were many who discovered that it was not as they had believed, and that the path was even as one in the mountains. These suffered it for a time, and then said unto the authorities: Release us from our servitude, we pray, thee that we may go elsewhere and do something that shall count in the land.

And there were some who did wangle mightily, and these were seen in the places where men are in public, each with a man of the King's host, yea even with several, who paid many talents of silver for the bake-meats and the wines that these damsels did consume. And these were the damsels who did say to the captains under whom they were placed: Behold, my mother's mother hath died, and the funeral feast is to-morrow, and it would not be seemly if thy servant were not there. Wilt thou not pity my desolation and release me until the sun hath risen and set three times? And being released, she did wink with her eye and hied her forth to the tryst. And there were those whose mothers had parents like unto the sands of the seas. It was even so from one end of the land to the other, so that men said of the band of the women of the air that it was a Wa-sho-ut.

CYNICUS.



AERODROME TERMS ILLUSTRATED.—“ Straights with the instructor,” By John Wood.

This prospectus has not been filed with the Registrar of Joint Stock Companies because (a) it has nothing to do with him, and (b) our lady messenger said she did not like the way he parted his hair. The Treasury have not been consulted, and so raised no objection to this issue.

THE HOT AIR FLYING CORPORATION UNLIMITED

CAPITAL: £99,000,000

of which 5,975,413 shares at 1½d. each are now offered at par.

OFFICE BOY:

(The appointment to this important post to be made in General Meeting. See special clause in Prospectus.)

DIRECTORS:

SIR LAMINATED WALNUT, B.A.D., *Chairman*
LORD DANTZIG PINE
COUNT RUPERT OF HENTZAU
MR. PINCHER BUTTON

ADVISORY COMMITTEE:

Secret Service: DR. WATSON
Equations: PROF. OMICRON
Navigation: SIR OWEN KETTLE (better known as CAPT. KETTLE)
Finance: ANONYMOUS

ACCOUNTANTS:

Messrs. SPRUCE, DOPE, SONS AND SPRUCE

SOLICITORS:

Messrs. VERITAS, FEES AND VINO-VERITAS

BANKERS:

THE INSOLVENT BANK OF RURITANIA

SECRETARY AND OFFICES:

MR. ANGUS FRAZERSTEIN, Bolt Corner, Spark Court, Hot Air Avenue, E.C. '02.

PROSPECTUS

The Company has been formed mainly for the purpose of establishing a means of communication with such romantic centres of interest as Ruritania, Hentzau and Kravonia.

There is no doubt that once the charm of being able to visit these delectable places is known there will be a great demand, especially from the fair sex, for accommodation on the Company's vessels.

With a view to ensuring that their clippers of the clouds shall never be without a full complement of passengers the Company intends to organise a great competition in which the most popular musical comedy and cinema heroes will be chosen by the lady shareholders to fill the posts of captains on these aerial liners. Before being finally appointed each prospective pilot will be required to sing to his conductorette "If you were the only girl," and to obtain at least 75 per cent. of marks.

The uniform of the Company's servants will be similar to that of the Ruritanian Hussars, cerulean blue with silver braid for the daylight and crushed strawberry and gold braid for the night services.

(N.B.—The blue uniform may be worn by special request of lady passengers on moonlight nights.)

It is proposed to make a speciality of a "husbands' boat" to leave London about noon on Saturday. This vessel will be commanded by Captain Kettle, so that all who travel by it are assured of a good time. The comfort of the passengers will be specially catered for, and various entertainments will be held in the Saloon. Professor Omicron will give exhibitions with his performing equations.

In order that there may be no misconception as to the financial standing of the new Company, we have submitted our Petty Cash ledger and stamp-book to the well-known firm of Spruce, Dope, Sons and Spruce, and we have pleasure in printing their certificate below:—

CERTIFICATE

Having examined the books of the Hot Air Flying Corporation, we have formed the opinion that there is no limit to the audacity of the scheme to be put forward by them.

Remembering, too, the propensities and capabilities of the illustrious gentlemen who ornament the Board of Directors, we feel certain that they will have no cause to complain of their pecuniary position as a result of their operations on behalf of the Company.

Examined (E. & O. E.) and found correct,

SPRUCE, DOPE, SONS AND SPRUCE.

The Corporation has retained the services of an expert financial adviser, who, however, prefers to remain anonymous for the present. That he is gifted with the right idea on matters pertaining to high finance is shown by the fact that he was discovered in a queue outside a shop in Holborn waiting for an opportunity to get a new season's straw for 10½d. This aptitude is confirmed by the address he gave us when appointed—1st seat on Victoria Embankment, West End. He has travelled extensively in the East* and knows the Bodega thoroughly.

While it is impossible at the moment to give details of the Corporation's aerial greyhounds†, we may state that the eminent services of Professor Omicron, the distinguished president of the Worshipful Guild of Differential and Integral Stress-Merchants, has been invoked.

* Especially Whitechapel and Stepney.

† For detailed description, with scale drawings and omniscient Editorial remarks, see "FLIGHT" Christmas Greeting, December, 1916.

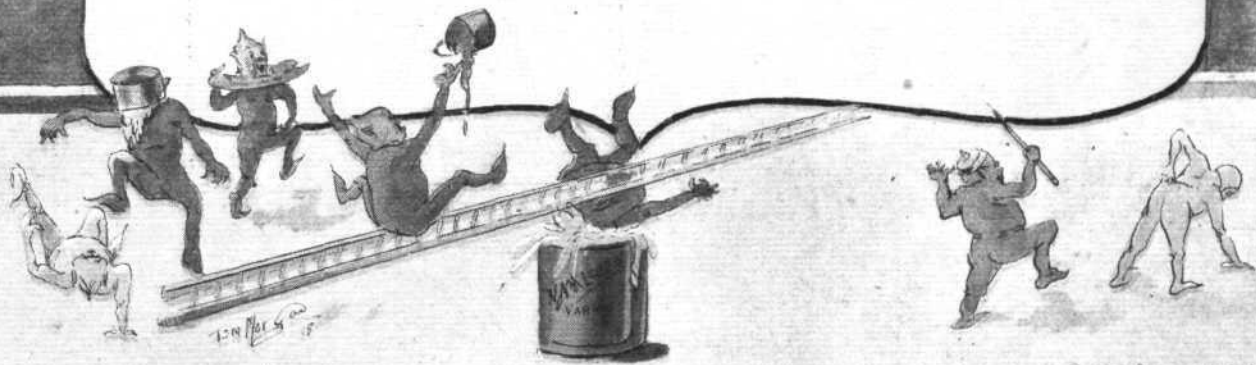


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HARMAN ADV.CO.

After devoting lengthy consideration and several sleepless nights to the Company's propositions, he has sent the able and lucid report printed below:—

Sirs:—

I was gratified to hear from your Chief Engineer this evening that in designing the machines for your services he proposes to utilise my incomparable formula for catastrophic phugoids of negligible amplitude.

I may say that it has never yet failed to remove the most obstinate and painful case of sophomore variorum.

The originals of recent testimonials can be seen at my office at any time by appointment.

The above was written on a piece of blue paper which had evidently once served as a carton for the professor's sugar ration. On the back we found an amazing equation, the solution of which* has so far defied all the efforts of the Technical Editor of "FLIGHT." We have sent it to several chemists, but have not succeeded in getting it made up.

In order to enable allotment-holders and proprietors of one-man businesses to lend their aid to this wonderful scheme, arrangements have been completed whereby shares may be paid for in kind.

Useful articles would be preferred, and the number of shares allotted will be based on the current retail price of the articles at noon on the day the transaction is consummated.

Allotment-holders on Parnassus are, however, informed respectfully, but firmly, that they are definitely and irrevocably barred from this offer.

A most complete office staff has been engaged, with the exception of an office boy.

Despite the fact that the post has been extensively advertised in all the leading papers, on cinema programmes and on the backs of tram and 'bus tickets, the assiduity of the Directors has met with no reward.

The salary offered is £5,000 per annum plus sundry perquisites, including the excess profit (if any) on the stamp-book.

If any shareholder knows of an insolent and indolent youth who would consider the possibility of filling the position, he is requested to wireless full information to the Head Office at once.

Copies of the Memorandum and Articles of Association of the Corporation can be inspected at the Offices during business hours.

The Directors will proceed to allotment immediately on the arrival of the first application.

No money will be returned, but the Directors reserve the right to decline any offer of payment in kind should they be unable to make use of the articles tendered.

* Probably this is the equation of whose adventures an illustrated account appeared in "FLIGHT" for December of last year.



The second-hand cloak-room attendant at the Enemy Aircraft Exhibition at Islington.



**The Longest Flight on Record.
And, he's always up to date.**